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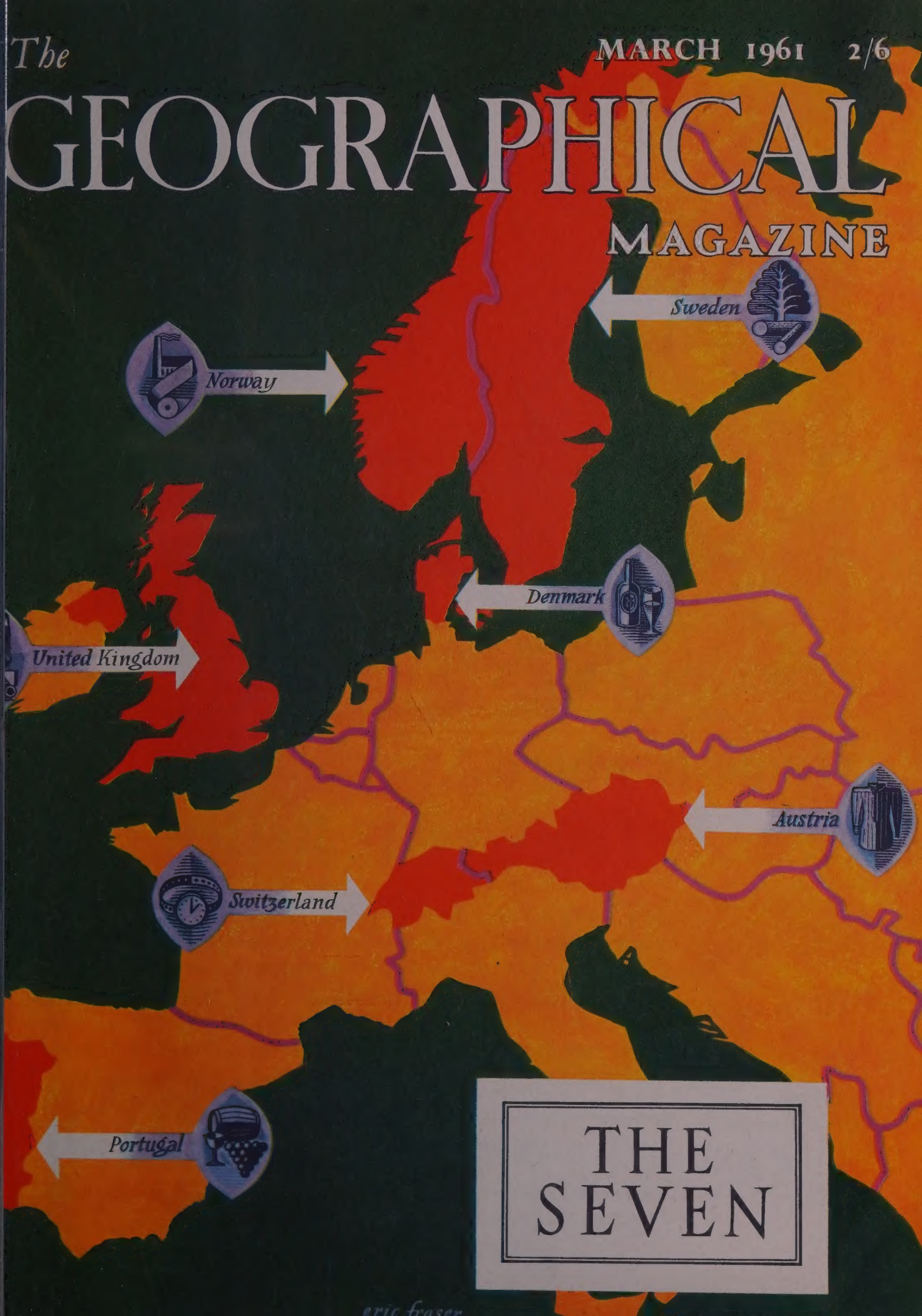
The GEOGRAPHICAL MAGAZINE



THE SEVEN

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THE TIMES WEEKLY REVIEW

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The European Free Trade Association

by THE RIGHT HON. F. J. ERROLL, M.P.

MINISTER OF STATE, BOARD OF TRADE

This introduction to a special number of The Geographical Magazine, *completely devoted to the 'Seven', explains the origins of E.F.T.A. and what the attitude of the British Government is towards it. Following the colour pages is a series of articles which give some idea how industry in the Seven countries will be affected by this most important Agreement*

SEVEN Western European countries have signed a Free Trade Convention. They are Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom. Their Agreement—sometimes called 'The Stockholm Convention' because that was where it was negotiated and initialled—establishes the European Free Trade Association. The peoples of these countries, who enjoy some of the highest living standards in the world, have an exceptionally strong interest in international trade, both with the rest of Europe—notably the six countries of the European Economic Community (France, Germany, Italy, the Netherlands, Belgium and Luxembourg)—and with the rest of the world. Their object in removing tariffs on trade with each other is to buy and sell more among themselves and at the same time help world trade to grow more rapidly.

The years since the war have seen the growth and development of much trade cooperation between the countries of Europe. The Organization for European Economic Cooperation (O.E.E.C.), first established in 1948 as the body responsible for the programming of Marshall Aid and implementation of the Joint European Recovery Programme, has developed in the years of its existence into an organization for general economic cooperation in which the members meet to discuss economic problems of common interest. The most important achievement of the O.E.E.C. was to bring about the progressive removal of quota barriers to trade between members with the support of a system of multilateral payments provided by the European Payments Union.

Some countries, however, wished to move more rapidly towards complete economic integration. As a result, in 1952, six countries—Belgium, France, Italy, Luxembourg, the Netherlands and Germany—set up the European Coal and Steel Community, under which trade restrictions on coal and steel were abolished between them, while they adopted common trade policies on coal and steel towards all other countries. The United Kingdom did not feel able to join this Community, but entered into special relations with it in an agreement signed in December 1954.

Following the success of the common market for coal and steel, the same six countries in the summer of 1955 decided to negotiate for a common market covering the whole of their economics. In March 1957 they signed the Treaty of Rome setting up the European Economic Community. The principal object of the Treaty is to provide for the abolition of all barriers to trade (the most important being tariffs and quantitative import restrictions) on all goods traded between the six countries; the Treaty also provides for the adoption of common trade policies (including a common tariff) towards all other countries. These aims are to be achieved over a transitional period of from twelve to fifteen years.

With the advent of the idea of the European Economic Community, the other O.E.E.C. countries, who for one reason or another did not feel able to join, took up a suggestion first made by Monsieur Spaak that a way of preserving and strengthening economic cooperation among the O.E.E.C. countries could be found by the establishment of a free trade area to include the six countries as well as the other members of the O.E.E.C. It was felt that, although the Treaty of Rome represented a most important economic development in European trade relations and, in particular, would cement the political relationship between the six countries, it was essential to preserve the spirit of economic cooperation between all the O.E.E.C. countries.

In 1957, therefore, the O.E.E.C. countries began negotiations between themselves with the aim of setting up a free trade area as defined in the General Agreement on Tariffs and Trade signed in 1947. (G.A.T.T. is an instrument which many of the nations of the world adhere to. It provides for tariff negotiations and consultations between its members, and stipulates that no new tariff preferences can be granted by one member to another country, unless they are given to all members of the G.A.T.T.: the exceptions allowed to this 'no-new-preference' rule are that countries may create a customs union or a free trade area. In both cases the members abolish all barriers to trade between themselves; but in a customs union they adopt common trade policies towards other countries, whereas in a free trade area they are free to maintain their individual trade policies towards other countries.) These negotiations were continued for nearly two years, and a good deal of progress was made. Particular points of difficulty were the special problems of agriculture, the differences in external tariffs and the related problem of agreeing on 'origin' rules. Origin rules are needed in a free trade area to ensure that goods imported from outside the area do not enter the area through the country with the lowest external tariff and then circulate freely in the area, thus undermining the higher tariffs of the other countries. In the end, however, agreement could not be reached, and the negotiations broke down in November 1958.

After that, the United Kingdom, Denmark, Norway, Sweden, Switzerland, Austria and Portugal felt that, failing the establishment of a free trade area covering all the members of the O.E.E.C., they—the 'Seven'—could, as a positive contribution, go ahead with the creation of a free trade area among themselves. This group of 90,000,000 people with a high level of imports and for the most part high standards of living would offer great opportunities for expanding trade as well as constituting a step towards agreement between all member countries of O.E.E.C.

Following the acceptance of the draft plan by Ministers in July 1959, the Convention was drawn up by officials in the autumn, and it was approved by Ministers in November. The Convention was ratified by the members on May 3, 1960, and came into force on that date.

The countries of the E.F.T.A. have, since the war, been closely associated with each other in the O.E.E.C. and have evolved a common outlook on many of Europe's fundamental economic problems. The speed with which the Free Trade Association negotiations in 1959 were brought to a successful conclusion in Stockholm is itself evidence of their similarity of approach to the issues involved.

Their special common interest, as mentioned above, is their unusually high dependence on international trade. The United Kingdom's imports represent about one sixth of the value of her gross national product while the imports of the rest of the Seven range from just over one fifth of gross national product for Austria to just under one third for Norway. The corresponding ratio for the United States of America is less than one twentieth.

About one sixth of the foreign trade of the E.F.T.A. countries is between themselves, and about one quarter is with the 'Six' of the E.E.C., but the greater part is with countries outside Europe, a factor predominant in their minds in choosing a free trade area rather than a customs union form of association.

The United Kingdom with its large population can support a wide range of industry. But although the populations of the other countries are small, their standards of living are among the highest in Europe. This has been achieved by a large degree of industrial specialization: examples are the highly developed precision machinery and chemical industries of Switzerland, the match industry and the precision engineering industries of Sweden, the Norwegian fish and wood-pulp industries, the Danish pig-breeding and bacon-curing industries, the lumber industries of Austria and the wine and fish industries of Portugal. Among the products which flow from this specialization are such leaders in world markets as Swiss watches, Swedish ball-bearings, Danish bacon, Scandinavian furniture. It has enabled a high degree of technological progress to be attained in selected fields.

The main provisions of the E.F.T.A. Convention cover all industrial goods, on which protective tariffs and quantitative import restrictions between the members are to be abolished by January 1970: the first tariff reductions (of 20 per cent) took effect on July 1, 1960. In the case of most Portuguese tariffs an extended timetable has been agreed. Origin rules have been agreed in the Convention: goods will qualify for reduction of tariffs if they have been wholly produced in the E.F.T.A. Area, if they have been produced in the Area by one of a number of qualifying processes, or, except for textiles, if 50 per cent of their export value has been added in the Area. The Convention also provides rules in respect of other obstacles to trade, such as government aids and restrictive business practices. There is a complaints procedure, under which a member country may refer to the Council in Geneva (which is the body operating the Convention) any case in which it considers that a benefit conferred by the Convention or an objective of the Convention is being or may be frustrated.

The E.F.T.A. is an outward-looking organization. Each of the members is free to modify its external trade policy. This allows the United Kingdom to maintain its special relationship in trade matters with the Commonwealth. Some of the margins of preference afforded to certain Commonwealth countries by the United Kingdom under the Commonwealth preference arrangements are affected by the United Kingdom's membership of the E.F.T.A. since, in abolishing tariffs for E.F.T.A. countries, the United Kingdom can no longer grant the preference against E.F.T.A. countries in favour of the Commonwealth. The Commonwealth countries with contractual rights have told the United Kingdom that they will not invoke in relation to the E.F.T.A. countries their rights to these preferences. We do not expect the creation of the E.F.T.A. to have a disturbing effect on United Kingdom–Commonwealth trade. In the first place, the bulk of the Commonwealth's exports consists of agricultural products—that is to say, of goods which in general are not covered by the E.F.T.A. Convention. (The four commodities which are involved in the bilateral Agricultural Agreement between the United Kingdom and Denmark—bacon, canned pork luncheon meat, blue-veined cheese and canned cream—were specially chosen for the reason, among others, that concessions to Denmark on these items would have the least impact on Commonwealth trade.) Secondly, the origin rules that have been worked out will not to any significant extent encourage E.F.T.A. manufacturers of finished products or of semi-finished goods to use raw materials produced within E.F.T.A. in preference to raw materials procured by importation from the Commonwealth: indeed, the Commonwealth will benefit as E.F.T.A. stimulates trade and thereby expands the demand for primary products which the Commonwealth exports.

In 1959 the E.F.T.A. countries' imports totalled more than £7,000,000,000: within this total they imported more than £2,000,000,000 of food, beverages and tobacco. In the same year they exported about £6,000,000,000 worth of goods; and within this total they exported nearly £2,000,000,000 worth of machinery and transport equipment. These figures demonstrate the importance of the group as a world trader, both as an importer of food and as an exporter of manufactured goods.

The E.F.T.A. is at the beginning of its career; within ten years, or less, all barriers to trade in the products covered will have been eliminated; and we expect to see an increase in trade following the new opportunities that are created. The increase in economic activity that will follow will contribute to world trade and prosperity. Meanwhile, in Europe, our aim is still to find arrangements that will enable trade barriers between all the countries of O.E.E.C. to be removed; the Trade Committee of twenty nations was set up specially in January 1960, to consider this problem amongst others, and its Study Group provides a forum for the examination of the possibilities of alleviating particular difficulties. The forthcoming G.A.T.T. negotiations also afford an opportunity to seek to reduce the general level of tariffs all round. The recent negotiations for the eventual transformation of O.E.E.C. into the Organization for Economic Cooperation and Development (O.E.C.D.), in which the United States of America and Canada will be full members, also give promise of continuing cooperation amongst the European countries and between Europe and North America. In all this the E.F.T.A. will play its part, and in building it up and strengthening it we shall materially contribute to the strengthening of the economic resources of the Western world.

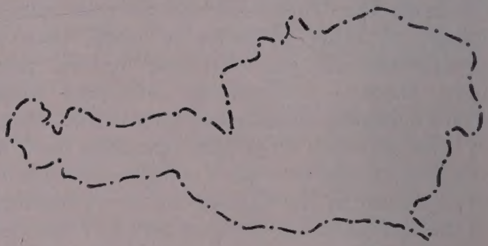
February 1961

AUSTRIA

Most people are unlikely to bother themselves a great deal about international trade agreements and, if questioned on the subject, would probably shrug the answer off and say: 'It's nothing to do with me.' In which they would be as wrong as possible. It matters a great deal to Johann Schmidt in Vienna that John Smith in London should buy and wear the nylon shirt which he, Johann, helped to make. So that, with the money thus earned, Johann in his turn can buy a Swiss watch or a bottle of Danish Pilsner or a Portuguese sardine or read the news on paper made from Norwegian trees: or, to go into even greater detail, so that he can buy a British car that uses Swedish ball-bearings. It matters, in fact, at every turn, and it is quite an interesting exercise to tot up exactly where the things that affect us all in our everyday lives were made; and to see how many of them have come from the other six countries of the 'Seven'.

Area (in square miles)	32,375
Population	6,968,000
Capital	Vienna
Population of capital	1,760,000
Towns over 100,000	5
Percentage of exports to E.F.T.A.	11·6
Percentage of imports from E.F.T.A.	11·7

Principal industries: Food; Textiles; Chemicals; Iron and Steel



(Opposite) *The Pest Statue, a Vienna landmark*

courtesy of the Austrian State Tourist Department

Kodachrome

Paul Popper

DENMARK

One of the surprises about the countries of the Seven is that so many of their leading industries overlap. In each country two of the four most important industries are the same as those of at least two of the other countries. Even so the international process of taking in each other's washing seems to work—presumably on the Annie Oakley principle of 'anything you can do, I can do better'. Like Danish beer, for example . . .

(Left) *Painting china at the Royal Copenhagen works.* (Below) *Bornholm, Denmark's easternmost island.* (Opposite) *Use of colour in a Danish food factory*

ll three Ektachromes from Photo & Feature

Area (in square miles)	16,576
Population	4,532,000
Capital	Copenhagen
Population of capital	1,116,000
Towns over 100,000	3
Percentage of exports to E.F.T.A.	40·5
Percentage of imports from E.F.T.A.	37·9

Principal industries: Iron; Food and Drink; Chemicals; Ships and Vehicles

oth Ektachromes from Photo & Feature

NORWAY

Norway is the second largest country of the Seven but it has the smallest population. It is the only one that includes agriculture among its principal industries, and though agricultural products are in general excluded from the E.F.T.A. Convention, nonetheless E.F.T.A. will help the Norwegian farmer to buy farm machinery from the United Kingdom.

(Above) *Timber being transported by water.*
(Right) *Norwegians on holiday in the sun*

Area (in square miles)	124,556
Population	3,541,000
Capital	Oslo
Population of capital	417,000
Towns over 100,000	2
Percentage of exports to E.F.T.A.	38·8
Percentage of imports from E.F.T.A.	36·2

Principal industries: Manufacturing and Mining; Shipping; Agriculture; Forestry

Both Ektachromes by Douglas Pi

PORTUGAL

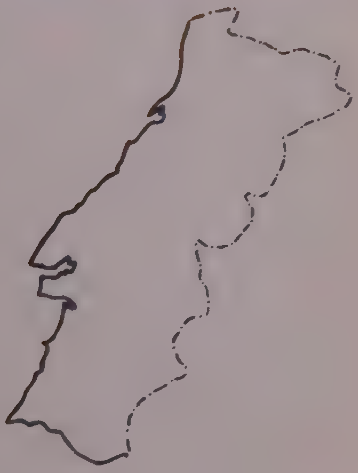
E.F.T.A. also helps the Portuguese farmer to buy a British-made combine harvester, though it may be Portuguese cork that provides the currency for it.

(Above and left) *Portuguese agricultural workers.*
(Opposite) *Tamariz Beach, Estoril, close to Lisbon*

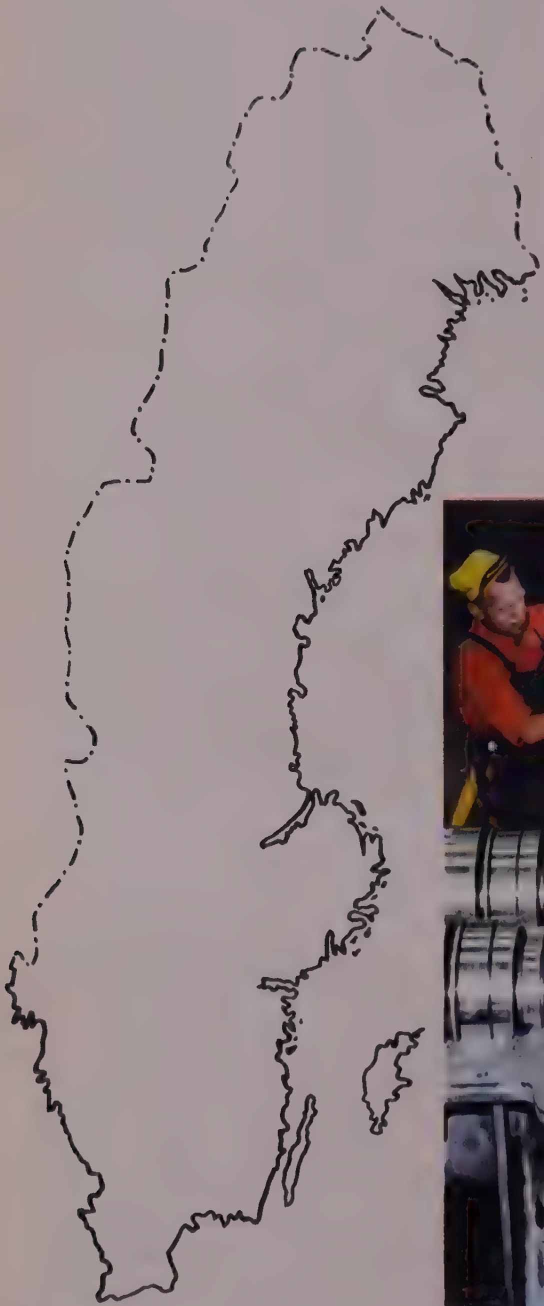
Kodachrome *Douglas Pi*

Area (in square miles)	35,404
Population	8,981,000
Capital	Lisbon
Population of capital	784,000
Towns over 100,000	2
Percentage of exports to E.F.T.A.	24·6
Percentage of imports from E.F.T.A.	24·1

Principal industries: Cotton textiles; Chemicals; Cork processing; Fish canning



SWEDEN



Area (in square miles)	173,426
Population	7,393,000
Capital	Stockholm
Population of capital	746,000
Towns over 100,000	3
Percentage of exports to E.F.T.A.	26·6
Percentage of imports from E.F.T.A.	30·8

Principal industries: Metal engineering; Food; Pulp and Paper; Textiles

Both Ektachromes from Photo & Feature

(Above) *Swedish engineers.* (Opposite) *Stockholm*

Apart from Britain, Sweden is the only member of the Seven that makes motor-cars. Some use British components; as a pleasing quid pro quo, some British cars use Swedish components

Both Ektachromes from Photo & Featu

SWITZERLAND

Tourism is Switzerland's fourth industry. It is astonishing to learn that last year this tiny land welcomed with hospitably open arms three foreign holiday-makers for every two of its own population.

(Opposite) *Even the hardworking Swiss can relax.*
(Above) *To the world, Switzerland means watches*

Area (in square miles)	15,944
Population	5,204,000
Capital	Berne
Population of capital	146,000
Towns over 100,000	5
Percentage of exports to E.F.T.A.	15·3
Percentage of imports from E.F.T.A.	12·7

Principal industries: Machinery; Chemicals; Watches; Tourism

hael Boultbee

Kodachrome

W. E. G. Brockman

Kodachrome

UNITED KINGDOM

The industrial resources of the United Kingdom are much more varied and extensive than those of the other E.F.T.A. countries, and exports are a vital necessity to a highly industrialized country. When E.F.T.A. really gets going, British manufacturers will find competition hotter than ever: but, in the end, that can only be to the good.

(Above) *The River Avon, near Evesham, Worcestershire, in the heart of England.* (Left) *Workers in the Kentish hopfields.* (Opposite) *The steel rolling mills at the Abbey Works of the Steel Company of Wales at Margam, near Port Talbot*

Area (in square miles)	93,394
Population	50,225,000
Capital	London
Population of capital	8,346,000
Towns over 100,000	53
Percentage of exports to E.F.T.A.	10·4
Percentage of imports from E.F.T.A.	13·1

Principal industries: Motor vehicles; Machinery; Chemicals; Iron and Steel

By courtesy of the Steel Company of Wales L

Austrian Textiles

by DR FRITZ KESSLER

oth photographs by Rhomberg, Dornbirn

The small town of Dornbirn is one of the most important textile centres in the Vorarlberg

DURING the four decades following World War I, the Austrian textile industry had to cope with at least four complete upheavals in the conditions of its very existence: the break-up of the old Austro-Hungarian monarchy, the *Anschluss*, World War II, and the almost total disappearance of traditional markets behind the Iron Curtain. This happened also to other industries in Austria, but few of them depend as much on trade relations with other countries, both as suppliers and as customers. Small wonder, therefore, that the new trade groupings in Europe are being watched with some sense of apprehension—an apprehension which has not, however, induced a negative attitude towards closer European integration. Where there is reluctance and timidity, it is just because this integration is for the time being only partial. Austria's overwhelming sense of being an integral part of Europe infects even prudent textile manufacturers, as is inevitable given the industry's history.

Commercial spinning and weaving, mainly of linen, started in Austria about the middle of the 17th century and was concentrated in the western provinces. The ownership of the industrial undertakings which developed from these beginnings was always confined to that part of the Empire which is now Austria. The workshops and factories set up later near Vienna, on the other hand, could until 1918 fairly be called Austro-Hungarian; not only because their products sold in the common market of the Empire, but because many textile houses distributed their factories and offices throughout the whole of the old monarchy. This diffusion somewhat helped to mitigate the effect of the formation of new frontiers, customs barriers and other obstacles after 1918. When nationalist feeling in the newly independent lands, with its anti-Austrian bias, began to subside, former connections could to some extent be resumed here and there.

This development was not restricted merely to exports and imports. A number of concerns whose interests were spread over the whole of the former monarchy remained under the same ownership as before, and whether the owners chose their businesses to remain Austrian or to join one of the new countries depended largely on chance, expediency or personal inclination. So it happened that many decisions concerning textiles in the Danube basin and south-east Europe continued to be made in the Vienna head offices of firms which also had subsidiaries with factories and distributing organizations in Czechoslovakia, Hungary or Yugoslavia.

The organization of the textile merchants, always very alert, successfully adapted itself to changed conditions, and managed to remain almost intact for quite a while. The Franz Joseph Kai in Vienna, the famous textile centre of the old monarchy, struggled determinedly to keep part of its former dominant role in the textile economy of central and south-east Europe right up to the Anschluss of 1938. Significantly enough, this trend then came to an abrupt end in spite of the union with the German Reich and the incorporation of almost the whole of the former monarchy into the economic system of Hitler's European 'new order' during the war, although these moves were aimed at economic integration.

But between the wars textile manufacturers had sometimes been able to persuade their governments to let economic realities prevail over economic nationalism—which has in any case always been comparatively weak in Austria. The best-remembered example of those attempts to mitigate the ill-effects on textiles of the political break-up was the establishment of the *Veredlungsverkehr*, or 'converting traffic', across the frontiers; for instance, cotton yarns spun in Austria were imported duty free into Czechoslovakia, where they were woven into cloth and then imported back duty free into Austria. A number of similar arrangements existed, providing the basis for a useful division of work between the textile industries of the *Sukzessionsstaaten*, the former parts of Austria-Hungary.

Examples like these show that the Austrian textile economy has it in its blood, so to speak, to cope with difficult situations such as those

Part of the Dornbirn Textile Fair. Now, nearly twelve years after its inception in 1949, this international fair has become the largest wholly devoted to the industry in any E.F.T.A. country

n the author

Austrian textiles in the world of fashion: a variation (*left*) on the classic of Austrian national dress, the *dirndl*; and two modern examples of Austrian design (*opposite*)—wool suit and embroidery cocktail dress

arising from the country's inclusion in the European Free Trade Association and its corresponding estrangement from the economy of the Common Market. The problem has grown because the textile industry has grown. There is practically no kind of merchandise falling under the heading of 'textiles' which is not manufactured in Austria, but there is also no article which is not both imported and shipped abroad; the need for foreign exchange, and varying taste, prevent a complete reliance on internal trade. The textile industry, with about 75,000 workers, is the biggest employer in the country, accounting for 15 per cent of the total labour force. Its pre-war capacity has been surpassed nearly everywhere in the rapid expansion which followed the economic revival of 1949, whereas only half the pre-war output had been reached by then. After a recent moderate recession, textile output in 1960 regained the record level of 1957. Diversification and specialization have been encouraged. Novelties have been added to the traditional competitive bulk goods. Made-up articles compete successfully in world markets. Vienna claims, perhaps without undue modesty, to be the most prominent European fashion centre after Paris. *Lodens*, jerseys, *dirndl* dresses and dress material, blouses, jumpers and other knitted goods, shawls and scarves, as well as men's shirts and ties, all 'made in Austria', have acquired a high international reputation. Austrian craftsmanship in finishing and taste in design are increasingly appreciated.

Special mention must be made of the embroidery industry, which is wholly concentrated in the western province of Vorarlberg. This industry hardly existed before World War II; the making of embroidery had been regarded as almost a monopoly of neighbouring Switzerland. In 1947, Austrian output was valued at a mere 500,000 Austrian Schillings (roughly £7000); now it is at an annual rate of 600,000,000 (£8,600,000). This amazing progress is the more remarkable as practically the entire output is for export, either in lengths or made up in clothing. Embroidery exports amounted to 540,000,000 Schillings last year: the second best customer (after Western Germany) for Vorarlberg embroidery was the United Kingdom. The rise in the volume of output was greater than the rise in value, owing to the trend favouring cheaper goods, which benefited Japanese competitors.

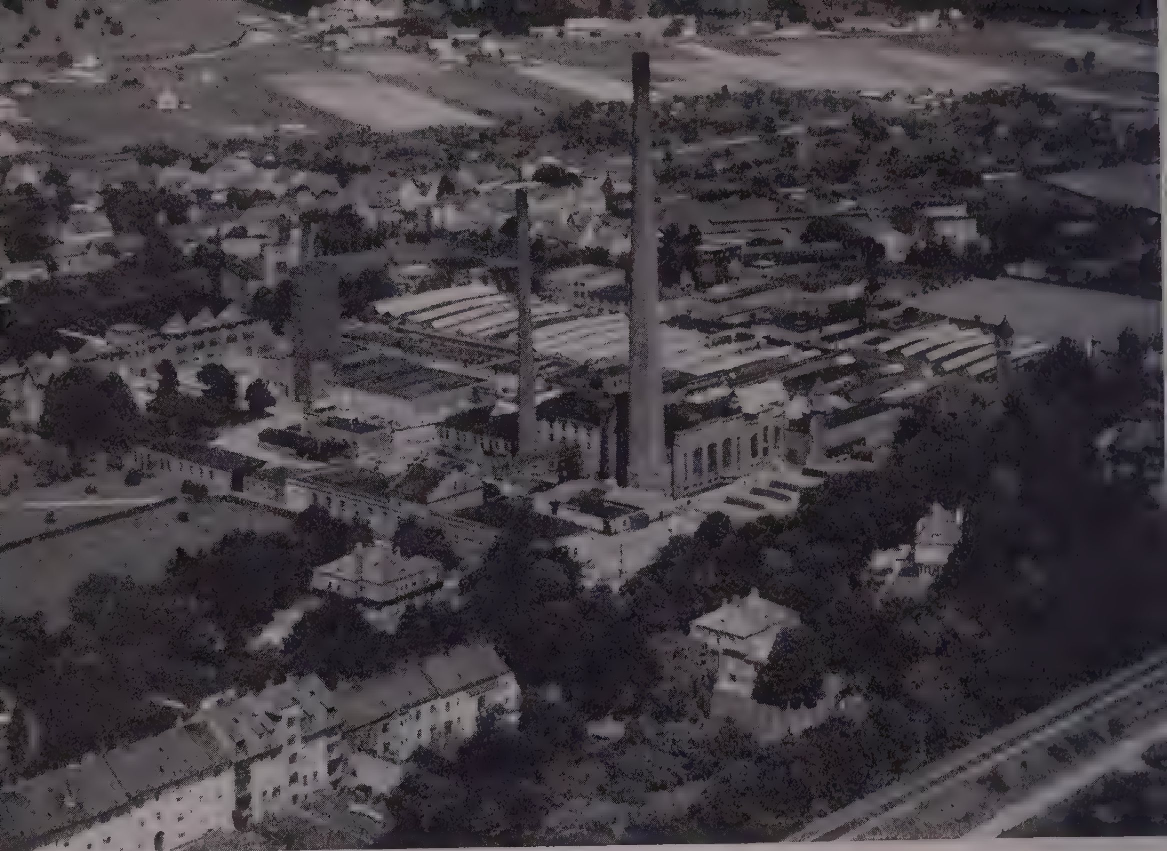
The success story of Vorarlberg embroidery is pointed by the fact that the small town of Dornbirn in Vorarlberg has become a household name in the textile world as the place of an annual international textile fair. Except for the limited show at Herning in Denmark, Dornbirn has so far been the only trade fair within E.F.T.A. which is almost exclusively devoted to textiles in the widest sense. The fair, which was first held in 1949, has grown from a modest local affair into a representative cross-section of the Austrian textile economy, and it is also being increasingly used by foreign exhibitors. Not only textile goods, but also textile machinery, chemical dyestuffs, etc., are on show. Last year, its international character was reflected in the presence of a great number of exhibitors from fifteen foreign countries among the total of 1000 exhibitors; buyers and visitors came from all over the world. The importance of Dornbirn as an international meeting-point may be seen from the fact that it was here that Professor Hallstein, President of the European Economic Community, suggested temporary measures pending a *rapprochement* between the 'Six' and the 'Seven' last August.

Dornbirn also typifies the successful integration of industry and town-planning in Austria; although it is a leading textile town, it has machine-manufacturing and brewing concerns, as well as a hydro-electric plant. At the same time it is a 'garden city', with much of the atmosphere of a small market town; the houses are so surrounded by trees that they can hardly be seen from the road, and you may still occasionally meet a herd of cows or a flock of sheep jangling along one of the streets.

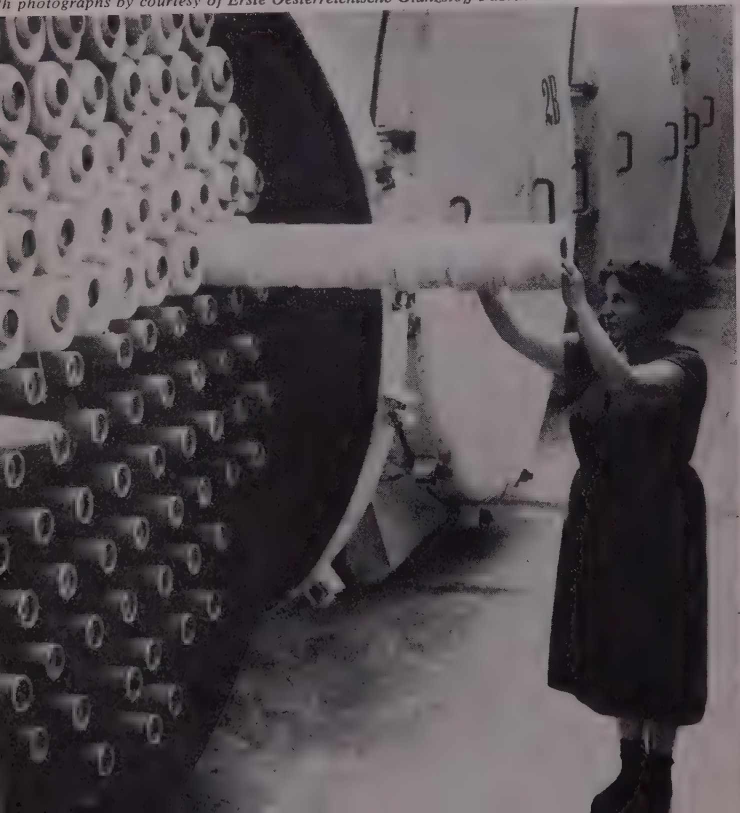
Embroidery is not the only chapter in the Vorarlberg success story. This little province with a population of just over 200,000 accounted for exports to the tune of more than £30,000,000 last year, most of them textiles. Goods from there went to about a hundred countries. Vorarlberg handkerchiefs are exported to fifty countries. A hosiery factory established as recently as 1948 employs now about 1000 people, a considerable proportion of the labour reserve in a small province—one which, moreover, has always preferred to preserve its own distinctive characteristics and occupations.

Whereas Vorarlberg has been favoured in many ways by political and economic conditions, the opposite is true of those eastern parts of Austria where many of the country's other textile-mills are located. One cannot talk about 'textile towns' as such in eastern Austria; different towns—all of them small—specialize in different products: Vöslau, near Baden, produces mainly wool; Lenzing in Upper Austria and also Sankt Pölten in Lower Austria produce staple fibre and rayon; Lambach in Upper Austria produces hemp. Of these only Sankt Pölten has a population of over 5000. In the eastern part of Austria, which was for ten years after

Both photographs by [illegible]



h photographs by courtesy of Erste Oesterreichische Glanzstoff-Fabrik



The First Austrian Rayon Company, which has its factory at Linz in Upper Austria, is only one of many concerned in the manufacture of man-made fabrics the war the Soviet zone of occupation, modernization was delayed and management subjected to the requirements of the occupying power. Industry in this area could be raised to the general level of efficiency and expansion only quite recently. The woollen-mills in this part are now among the best equipped on the Continent. Special mention of the Lenzing fibre-works, which have become the biggest producers of staple fibre in Europe, is perhaps appropriate. This concern, employing 3100 people, has an annual output of 54,000 tons, three-fifths of which is taken up by manufacturers abroad. Staple fibre is the only textile raw material produced in Austria.

It should not be forgotten that the reconstruction of the Austrian textile industry, and indeed of the country's industry altogether, would hardly have been possible—and certainly not in so short a time—without generous Marshall Aid. Great Britain also made a special contribution to the recovery of the woollen industry by providing, immediately after the war, a revolving credit for the purchase of wool; it was for a long time this scheme alone which secured wool supplies.

As far as the possible advantages to Austria of European integration are concerned, several factors must be borne in mind. One is the very high proportion of Austria's textile exports, especially in cotton goods. Another is the smallness of the home market, which makes it very sensitive to any new rise in imports. Furthermore, although Austria has joined the Seven, her foreign trade in textiles (as in many other commodities) gravitates much more towards the Six. In 1959, 65 per cent of her textile imports and 39 per cent of her exports were with the Common Market, as against 24 per cent each with E.F.T.A. These statistics might need some small modification to give the full picture. For instance, the textile purchases in Vienna of a London firm of shippers will appear in the trade returns as Austrian exports to the U.K., whereas the goods might in fact have been delivered neither to the U.K. nor even to a Commonwealth country. On the other hand, merchants in Hamburg or Amsterdam are buying Austrian textiles for Nigeria, but the goods are registered in the trade returns as exports to the Common Market. The actual destination of textile exports, which on their way might undergo various stages of processing, cannot always be easily traced.

What the textile industry is afraid of is not so much the certainty of intensified competition as the threat of discrimination. The discriminatory effects of the existence of two trading groups have not yet led to an absolute loss of business, but, relatively, a certain deterioriation has taken place. Foreign trade in textiles, which had somewhat slumped in the previous two years, briskly recovered in the first six months of 1960; but whereas exports rose by only 20 per cent, imports jumped by more than 40 per cent, and for the first time since the crisis of 1949, foreign trade in textiles is showing a deficit.

The problem is more acutely felt on the home market. Although there has always been an appreciable, but far from excessive, measure of protection for the manufacturers, there has also always been considerable foreign competition on the home market, which even now comes more from the Six than from the Seven. The home market has been widely liberalized under O.E.E.C. arrangements, and more recently by the progressive freeing of dollar imports from quantitative restrictions; now the additional reduction of import duties in accordance with the E.F.T.A. agreements is opening the door still wider. But nobody, or almost nobody, wants to block the road to freer trade and thus to a more closely knit European economy.

Rationalization will have to continue energetically. The industry need not, and would be unable to, carry out drastic measures of reorganization like those in Lancashire. But within the framework of its needs and means, a certain amount of automation and new finishing methods are being introduced. The productivity index in the textile industry improved by another 6 per cent in 1959, which at least compensated for the shortage of labour, although it was insufficient for a quick expansion of output.

There has been one definite break with the past in the Austrian textile industry in the process of coming to terms with the new, more unified European markets. This is the realization, confirmed by the experiences of the five-year period after the Austrian State Treaty, that the former economic structure of south-east Europe has been irrevocably destroyed. Those countries which constituted the main traditional markets for Austrian textile exports—half of which they absorbed even in the years between the wars—will never regain this former role. The last nostalgic dreams of Austria's trade with Eastern Europe recovering its former importance have come to an end.

Port: The Englishman's Wine

by HECTOR BOLITHO

h photographs from Pictorial Press

It is pleasant, if immoral, to reach the age when food and wine are more important than what one thinks about the follies of history; to realize that what enters one's mind is the devil's business, and that there is no defence against it; but what enters our stomach is an experience over which we have an increasingly intelligent and delightful control. When we reach this serene, civilized state, we think of the chianti we drank in Tuscany and the scampi we ate in Trieste, and forget Mussolini and his blaze of power; we remember the pearly-grey caviare from the Danube delta, with sips of *tuica*, or vodka, and forget the angry brigand who menaces our peace; we recall the fresh sardines, charcoal-grilled, that we ate at Faro, and the port wine we drank on the north bank of the Douro, and do not care whether Professor Gomes is angry with Dr Salazar or not.

Those of us who have navigated the Douro never escape from the silent, almost Oriental magic of the river—more like the Indus than the Rhine—that flows from the warm heart of Spain to Oporto and the unpredictable tempers of the Atlantic. We lift our glass of port, wherever we may be exiled, and recall the sudden, lofty banks, with as many as one hundred terraces of vines, rising from the water's edge to the sky. Here the history of port wine has been made, woven in with the old, friendly bond between Portugal and England. It is pleasant to remember that some of Wellington's soldiers sleep there and that grape vines grow from their dust.

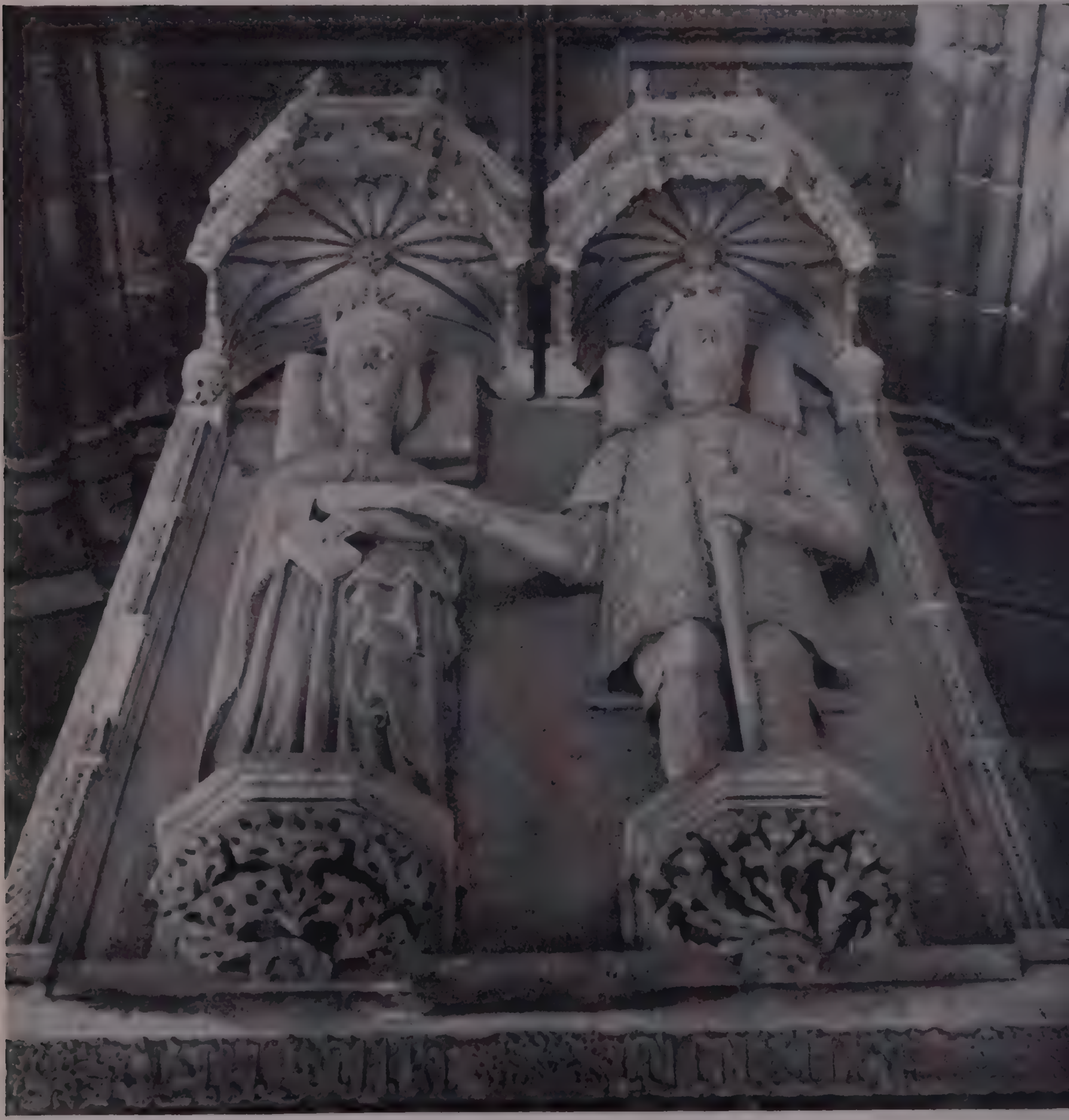
If we are not too pernickety about our history, we might claim that this bond between England and the port-wine country began with the Romans shipping Britons to Portugal as slaves. But this was not a proud beginning, for the slaves were of such poor quality that they fetched low prices. Better enjoy the story of the Crusaders going ashore, first in 1140, and then the great sight of May 1147 when 190 ships put into Oporto on their way to the Holy Land. We come on the first mention of 'good cheap wine and other delights', and the corrupt argument of the Bishop who gathered the Crusaders together in the Cathedral cemetery and said, 'Do not be seduced by the desire to press on with your journey, for the praiseworthy thing is not to have been to Jerusalem, but to have lived a good life on the way.' So the Crusaders stayed and enjoyed the wine, before they sailed on and drove the Moors out of Lisbon.

The next great occasion was the landing of John of Gaunt in Oporto, in 1386, on his way to claim the crown of Castile. His daughter, Philippa of Lancaster, married King John of Portugal, and no sentimentalist could resist the message of their tomb, at Batalha—the amiable effigies on top, of the English princess and the

In 1907, Oporto was granted the sole privilege of shipping Douro wines over the sand-bar which stops large vessels entering the river. It can be seen when the tides are very low

Portuguese king, holding each other's hand.

Out of this history emerges the peculiar, realistic story of the port trade and the settlement of English wine shippers, in Oporto—some of them now of the fourth and fifth generation. They wear their old school ties, from Eton and Winchester, but they use the word 'we' when they speak of themselves and the Portuguese. In the Rua Nova dos Inglezes they have their 'Factory House'—a mundane name for what is a splendid town mansion, in which the port shippers dine with a ritual that suits their trade. There are two dining-rooms and in the first of them, sitting on Chippendale chairs, as many as forty members are served with their princely dinner. Then they 'repair' to the second room for their port and dessert, so that they may savour the wine without any hint of cooking smell from



The tomb of King John I of Portugal and Queen Philippa, the daughter of John of Gaunt. They lie buried in the Gothic abbey at Batalha, where the independence of Portugal was won in 1385

From the author

From the author

British port shippers and merchants outside the Factory House in the Rua Nova dos Inglezes, Oporto, in 1834. From a painting by the Anglo-Portuguese Baron Joseph James de Forrester

the other room. The dessert is eaten off soft-paste Copeland plates that would make the Victoria and Albert Museum jealous; the port is treated with the respect it deserves.

But I have used the word 'realistic', and this must be the theme for the rest of the story. When I went to the Douro, I stayed with one of the port shippers in his country house among the vineyards. It was called Quinta do Bomfim, and the vines were spread over hundreds of terraces, on the north bank of the river. After dinner, my host took me to a low stone seat among the grapes; and there, with the summer darkness about us, and the smells of the night, he told me his story.

'You know,' he said, 'if Adam came back to earth, there is much that he would recognize in the Douro Valley; in the way that we make our wine and press our olives.' He leaned forward to the nearest vine and said, 'Touch it; feel the gnarled old trunk. That vine is possibly twenty years old; we keep them until they are twenty-five and then we replace them.'

I bent down and felt the lower branches of the vine, which was not more than three feet high. My friend told me that they are never allowed to grow beyond this. He guided my hand towards the ankle of the vine, where it grew out of the rock; then he said, 'The roots go down four feet or more; we have to blast the holes in which to plant them.'

I picked some of the grapes and ate them; they seemed withered and I said, 'They taste more like raisins.'

My host answered, 'You see, we leave them to ripen like that, for the sugar, and the flavour. In this vineyard, it takes as many as eight or nine vines to produce a gallon of wine.'

He then explained the process—the addition of the brandy when the juice is sufficiently fermented; when the right balance between sugar and alcohol is achieved. The brandy arrests the fermentation and fortifies the wine, giving it the richer quality that port requires.

Then I was told what I was to see when the

orial Press

(*Above*) Portuguese women working in a typical vineyard on the Douro—the Quinta do Junco. (*Opposite*) Treading begins with two lines of men pacing backwards and forwards in step. By the end they are dancing gaily in the grape juice, accompanying themselves with songs and music

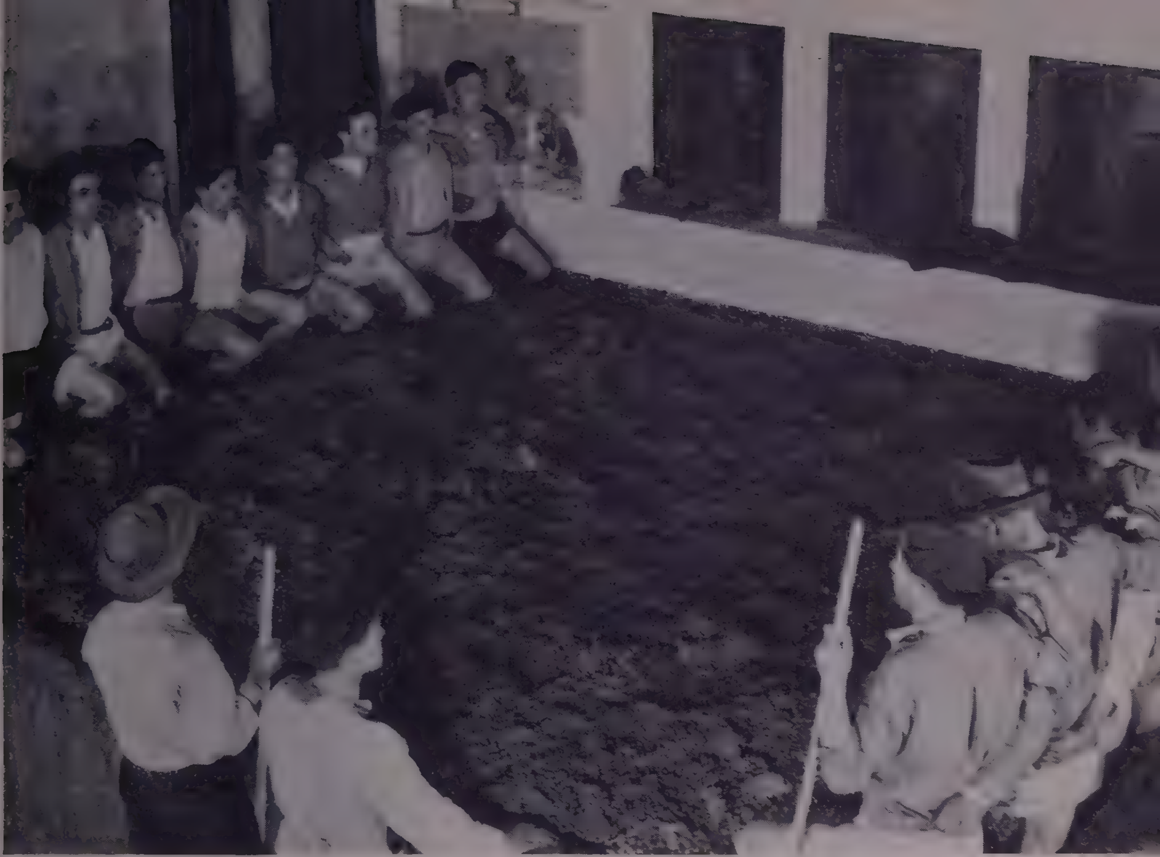
vindima, the harvest, began next day; when the peasants would come down from the hills, to pick the grapes and tread them. My friend said, 'The colour of the wine comes from the skins. That is why we press the grapes in the old, biblical way. No machine can do the work of bare feet; pressing every drop of colour from the skins, but never breaking the pips, as machines would do.' Then he said, 'But even the pips are not wasted; we feed them to the chickens.'

I said, 'There can't be much food value in a grape pip,' and he answered, 'No, but it keeps the chickens amused.'

I was awakened next morning by the thump of a drum and the merry squeaks of a concertina. The peasants had arrived from their villages and the picking had begun. The girls filled the big baskets and the men carried them down to the *lagars*—the immense granite tanks, like swimming-pools, in which the grapes were to be trodden and pressed, until the last drop of juice was squeezed from them.

In the evening, when the first lagar was full, twenty-two men, naked to their thighs, lined up in two ranks, thirty inches deep in the ripe fruit, and the solemn discipline of the treading began. The ceremony is traditional and unchanging: for two hours, their arms about each other, the men trod and trod, their legs rising and falling with the precision of guardsmen, to the '*Um! Dois! Esquerda! Direita!*' of their leader, until the grapes became a purple bath. Then, at a signal from the foreman, the solemnity ended: each man was given a tot of raw spirit and a cigarette, and a splendid madness began. Three of them picked up a drum, a mouth organ and a concertina, and the others joined them in a wild polka, splashing the juice against their legs, and singing songs—also traditional—of such licentiousness that my host's son straightened his Rifle Brigade tie and refused to translate them.

At midnight I left the Bacchanal and went to my room, but I could still hear the singing, more wild than ever. While I slept, the gallons of juice



Both photographs by G. How

torial Press

Experts taste and classify the wine before it is bottled and marketed

were already fermenting; the sugar was changing to alcohol, and the mysterious alchemy that was to produce bottles of glorious wine had begun.

Three days later, when I returned to the Quinta do Bomfim from a journey further up the Douro, I wished to see the next stage of the 'mysterious alchemy', so I went to the lagar alone. There was no hint of the pagan scene I had watched during the treading: the only sound came from the little jets of carbon dioxide that spat out through the trembling surface crust of pips and skins and broken vine stems. The purple crust was sturdy enough for a child to lie on it; beneath lay the pure wine, growing in richness, waiting for the moment when the degree of remaining sugar should be 'just right', before being run off through pipes in the bottom of the lagar, to be fortified with brandy in the great vats below.

When spring comes, the port is placed in casks and sent down the Douro, usually by rail but sometimes still in the old broad river-boats, to Vila Nova de Gaia, opposite Oporto. Here are the vast, cool 'lodges' where the shippers hoard their pipes of wine, and where the realistic business of selling and transport is arranged. If his wine of the year is especially good, the shipper may 'declare a Vintage', and bottle it in his lodge, unblended, for export when it is two years old—to be put down to sleep in cellars for the delight of the next generation. But most of the wine will be left to mature in the wood, and then blended with others of different ages, to achieve particular 'ruby' or 'tawny' characteristics, and finally shipped in cask to the merchant who will bottle the port himself.

Captain Marryat wrote in *Peter Simple*, 'The Portuguese and the English have always been the best of friends because we can't get no Port Wine anywhere else.' The Portuguese can seldom afford to drink it, so of the 18,000,000 gallons produced, on an average all but 7·5 per cent is exported, mostly to England which takes one-third of the whole output, because it is still 'The Englishman's Wine': even so it is not long since we took the half of it.

France, Belgium and Germany come next, and

From t

Port wine awaiting shipment from Vila Nova de Gaia, opposite Oporto

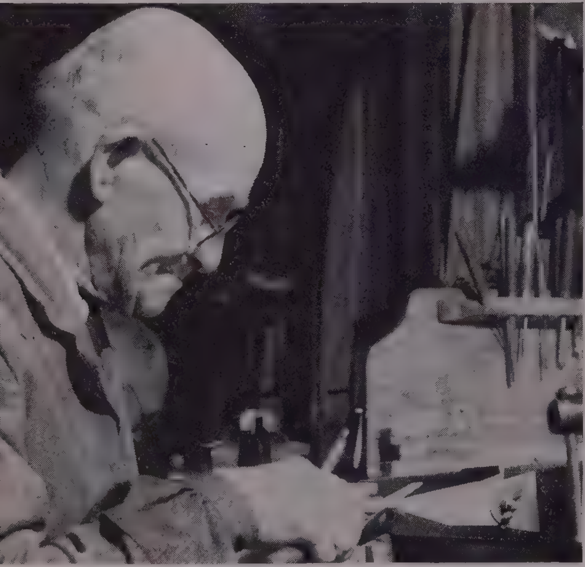
in that order. Denmark comes fifth with 4·4 per cent, despite the fact that the Danes drink more port per head than anyone else. Alas for port shippers, there are only a few Danes. Of the other E.F.T.A. countries Norway takes 3·6 per cent, Sweden and Switzerland 2·1 per cent each; and Austria, rather surprisingly, takes a negligible 400 gallons.

It is pleasant to read in the newspapers that the common-rooms of Oxford's new college, St Catherine's, although dashingly 'contemporary' in design, are to have three 'real open fire places': the architect says that this will allow 'conservative-minded dons' to enjoy their port in a proper setting. We read also that the lieutenant-colonel commanding the Scots Guards reports that his officers 'still like to drink port as long as they can afford it'. But these snippets from the gossip columns are misleading, for they imply a certain snobbishness that has often intimidated humbler wine drinkers. The finest vintages are costly and need to be treated with care: the less pretentious ruby and tawny port wines are as robust as sherry—and no more expensive.

Many hotels and bars in Britain serve port in wretched little thimble-sized glasses, which quite stifle the pleasure of inhaling its delicate bouquet; and some make exorbitant profits—as much as £2 a bottle—by refusing to pass on the benefits of the recent reductions in duty. But, in spite of this, port wine is growing in popularity, especially among younger people whose adventures have taken them on summer holidays to Portugal, as witness the fact that we drank 102,000 gallons more in the ten months up to October 1960 than in the same period of the previous year. And that, in terms of little thimble-sized glasses, is a lot of port. Let us hope it will soon be even more, with the benefits of E.F.T.A. and the cuts in tariffs.

From every point of view it seems that the future for port is rosy, and let the politicians scheme and argue as they will, and let the economists wrestle with their tariffs and statistics; I believe that the Portuguese and the English will continue to be the best of friends, so long as the sweet grapes ripen on the rocky banks of the Douro, and we are allowed to drink the wine that is harvested from them.

photographs, except two, from Pictorial Press



Bits and Pieces:

THE peculiar feature of Swiss industry as a whole is its almost complete decentralization. There are less than a dozen factories in the whole country employing more than 2500 hands. Basle may be noted for its chemicals, pharmaceuticals and dyestuffs; Winterthur, Baden and Zürich for 'the big machines'; St Gallen and several other centres for textiles; and the Bernese Jura for the famous Swiss watches and the robot machines that turn out the hundreds of tiny parts which miraculously, as in a trick-film, assemble themselves into a wrist-watch; but all this is apt to be misleading.

For lack of raw materials, watchmaking is the only mass-production industry in Switzerland. All in all, it comprises some 2800 factories employing 70,000 people and turning out a total (1959) of around 38,500,000 watches. 97 per cent of this output is exported; in 1959 its value totalled some 1,125,000,000 Swiss francs (over £93,000,000). And though the watchmaking industry as such has grown up organically in certain definite areas, there are only sixty factories that can claim to possess facilities for producing a complete watch, from A to Z, under their own roof. Making the cases is one job, making the dials another; then there are the mainsprings and hairsprings, the little wheels or pinions, the glasses (called crystals in the trade), the jewels (piercing these with thousandth-of-a-millimetre accuracy to bear the shafts is an additional process), to say nothing of the screws (three thousand to the thimbleful), the hands, the accurately stamped and drilled side-plates to hold the lot together. And so it goes on. . . .

Most Swiss watches, even some of the most famous makes, are the products of a score of manufacturers of 'bits and pieces'—the so-called *décolletage* (precision machining) industry, which is spread far and wide.

Now, the accuracy of the product of any automatic machine, whether it be a pinion, a screw or a platen, is no better than that of the

The Swiss Precision Industry

by R. A. LANGFORD

machine itself. This means that these machines must be made to the same rigorous tolerances by yet other machines which, in their turn . . . etc. Thus we move, as it were, from the microcosm to the macrocosm, reciting backwards as we go Swift's classic jingle:

> So, naturalists observe, a flea
> Hath smaller fleas that on him prey;
> And these have smaller fleas to bite 'em,
> And so proceed *ad infinitum.*

On top of this comes the craftsmanship of the assemblers, juggling with microscopic bits and pieces which only become identifiable under a magnifying glass. And behind the scenes are the engineers, who worry about new selfwinding and calendar mechanisms, and—in the backmost rooms—the fashion artists who design new models and stylings with a flair equalled only in the Parisian *haute couture*. All in all, a most intricate and ramified business.

But the Swiss precision industry does not end with watchmaking. To see it in its entirety one has to explore the backwoods. There is hardly a village in the country without its 'local industry', generally a small but modern factory tucked away behind the tidy manure-heaps and cosy inns that make up the main street frontage. The stranger, oblivious, drives through on his way to St Moritz or Lugano; the visitor in the trade with an appointment turns off and looks for a trim little factory whose products are a household word all over the globe in one particular, highly specialized and, often, abstrusely technical field.

If, for instance, you are interested in the fastest, most efficient ribbon-weaving looms in the world, you will find them in the village of Frick; if you want a balance that can weigh specks of dust—or, by remote control, radio-active infinitesimals—stop at the village of Stäfa, on the Lake of Zürich, where today half the world's requirements of micro-balances are produced. Sir Winston

courtesy of the Cyma Watch Co. S.A.

Automation in the watch industry: screw-cutting lathes at the Cyma Watch Company's factory

Churchill has bought his oil-paints since the war (his consumption, I regret to say, is negligible nowadays) from a small family factory in the Swiss village of Urdorf. The first time he tried them out he was so delighted that he exclaimed: 'I want to meet the man who made these paints and shake him by the hand!' And he did. In fact, the two of them became firm friends.

All over the country there are manufacturers of bits, pieces and gadgets so pedantically and ingeniously accurate that their sale in foreign markets provides a quarter of Switzerland's population with a livelihood. It may seem strange that the Swiss, who come of sturdy peasant stock, should have developed this flair for manual and mechanical precision in such a high degree. The reason is that they are perfectionists at heart and simply cannot leave well alone: no sooner have they created something good than they feel the urge to make it better. For them, accuracy begins several noughts after the decimal point.

This is not an overstatement: I have seen it confirmed again and again over the past thirty years. During the last summer holidays, for instance, I attended an international gathering held, by chance, at a lakeside boarding-school. There I slept in the vacant bed of one Hans Meier, a seventeen-year-old German-Swiss pupil. And on the door of the little wall-locker above his bed Hans had pasted for his own edification a slip of paper with the words (in English, if you please!): 'The most exciting thing in life is the search for perfection.' For all I know, Hans may have thought this up himself, or he may have borrowed it from one of the Great Thinkers. But wherever he got it from, the phrase fits into place as the key-piece of the entire Swiss economic jigsaw puzzle.

Switzerland possesses neither coal, iron nor oil; every ounce of her industrial raw materials, therefore, has to be imported. The country itself, with a population of approximately 5,000,000, is divided into 23 per cent unproductive area (mountains, glaciers, lakes), 46 per cent farmland, and 25 per cent forests. So the Swiss made a virtue of necessity and switched at an early stage from steam to electricity, converting the 'white coal'—the ice and snow so abundant in the high Alps—directly into electrical energy as it melted. By comparison with Switzerland, Britain has missed the age of electricity altogether: no Swiss can understand why it should have been necessary all these decades for British coal to be manhandled and hauled across country by rail, and shipped up and down the coasts in tramp steamers—growing more and more expensive with every mile it travels—instead of being converted into electrical energy at the pithead. Had the Swiss been living on an island with a coastline as serrated as Britain's, I am certain they would have harnessed the tides long ago and only dug enough of the dirty, dangerous, extravagant mineral to meet the needs of the few industries for which it is essential.

Generating electricity from stored ice-water called for turbines, pressure pipelines and dynamos. The Swiss started to design and build these for their own use. And since this gave them a long start in the international field, they soon found themselves exporting to every part of the world as much of the 'big stuff' as they could produce.

The power consumers, in their turn, needed motors, instruments, control devices for their electrically driven machines and apparatus. The demand automatically created a supply, and thus arose a new industry, or rather a whole labyrinth of highly specialized producers turning out the 'bits and pieces' for the electric-power consumers. Again, these factories are to be found in small towns and villages up and down the country. Their products are patented all over the world; their trademarks signify the *non plus ultra* to electrical engineers as far apart as Venezuela and Japan.

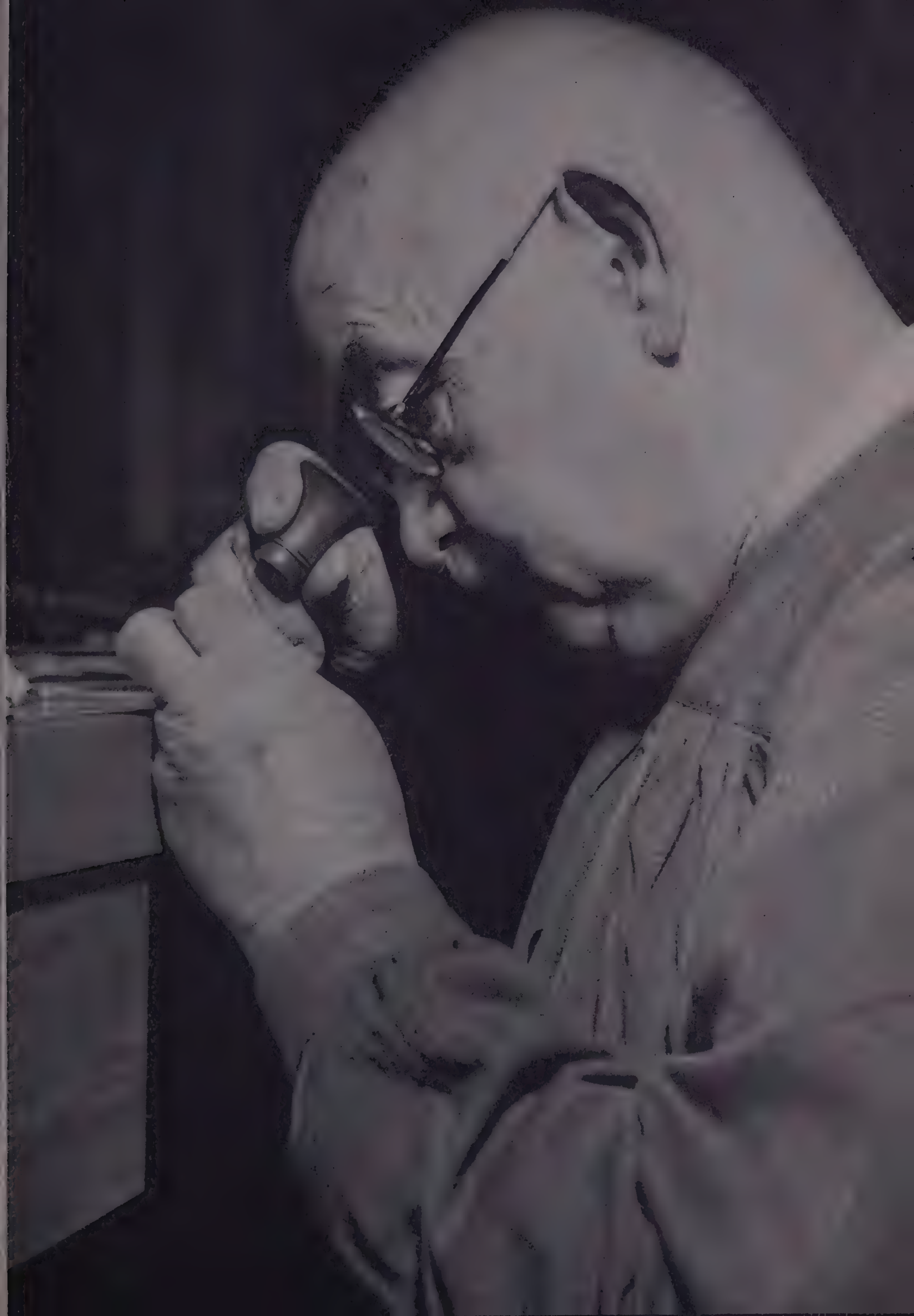
With their urge for perfection, their inventiveness and their natural gift for painstaking, tasteful craftsmanship, the Swiss were actually lucky that their soil proved to be devoid of mineral resources, the raw materials for all modern industry. For instead of sweating in the iron and coal mines, they found it far more profitable to import, say, a kilogram of finest Swedish steel, convert it mechanically into watch-springs, and thus increase its inherent value by several thousand per cent.

This is but one example of the development of what in Switzerland is called 'the refining industry', and it is typical of scores of others, particularly in respect of 'bits and pieces' whose size is often in inverse proportion to their cost. It is also typical of the point already made, viz., that the Swiss precision industry is so highly specialized, and consequently so decentralized, that there are few factories in the country which can manufacture a complete watch.

But perhaps the most striking feature of Swiss

Much of the work on Swiss watches is so fine that magnifying glasses as well as special lighting are essential. Oiling and adjusting demand as much skill as the actual making of the parts

courtesy of the Cyma Watch Co. S.A.



industry is that it is virtually 'strikeproof'. The last major strike occurred at the end of World War I as a sequel to the Communist riots attendant on the final collapse of Germany, just over the border. Swiss troops were called out to quell disturbances, and Swiss civilians were fired on.

Aghast, the Swiss authorities and citizens resolved that this should never happen again. They set about building a system of collective agreements between employers and workers in each trade and industry, based on mutual goodwill. And the system has never failed once. Wage disputes have arisen on numerous occasions, and at times the government has had to arbitrate, but the workers have full confidence in their union leaders and are willing to abide by all decisions taken at top level.

In September 1960, for example, the printers —among the best organized workers in the country—felt they had a wage grievance. After long and fruitless negotiation they threatened to walk out. Both parties appealed to the government, and within a week a compromise was found after each party was satisfied that it had obtained the best possible conditions. A 'wild-cat' strike would have been an insult to Swiss common sense. Strikes are not illegal in Switzerland, but they are regarded by the worker himself and by every other intelligent citizen as a form of blackmail and thus beneath his dignity. The socialist party is numerically the strongest in the country, the trade unions are powerful and independent; but everybody concerned is consciously aware that the worker would be the first to suffer if Swiss products ceased to be competitive in the world's markets. 'Switzerland delivers the goods' is not merely a commercial slogan but an expression of national pride. Even a minor strike would be something for all to be ashamed of.

After 1945, Switzerland was the first country in Europe to open up her frontiers to foreign workers. Her industries were of course intact, and the growing demand for her products abroad is most aptly illustrated by the output figures in her most typical industry, watchmaking. They run like this: 1945: 18,800,000 watches exported; 1950: 24,226,000; 1955: 33,742,000; 1959: 37,262,000.

In order to keep pace, surplus Italian labour was admitted in ever-increasing numbers to perform the unskilled work, leaving more Swiss free to tend the machines and uphold the old tradition of craftsmanship. Today, no fewer than 400,000 foreign workers are helping the Swiss get on with the job. What this would mean in terms of British conditions can only be realized if we multiply the number by ten (5,000,000 Swiss, 50,000,000 Britons). In other words, we should have to imagine the impossible: 4,000,000 foreign workers in Britain!

Yet the labour shortage in Switzerland remains just as acute as before, and the available reserves in Italy, Austria, etc., are practically exhausted. Now, in desperation, the very last labour reservoir in Western Europe is being tapped—Spain.

Progressive economic integration in Europe is not likely to have much effect, either positive or negative, on the Swiss precision engineering industry, at any rate for the time being. Admittedly, export is this industry's very life-blood and any liberalization or customs tariff cut within the E.F.T.A. system will be of incidental benefit to the Swiss watchmaking industry, which still holds almost monopoly status in Europe. In the present period of general prosperity there will always be a steady demand for the well-known makes at any price. Most of the other products of the industry are, as already explained, so highly specialized that the markets for them are clearly defined. Finally, a very high percentage of Swiss precision products is exported overseas and will thus not be affected by the processes of European integration.

Switzerland's own traditional import policy has always been very liberal indeed, so that percentage tariff cuts will make little difference to the play of competition on the domestic market, where quality rather than price is the primary factor.

Progressive economic integration is not entirely to Switzerland's liking. As President Petitpierre said last year in Parliament: 'We know it is necessary, but it has certain obvious drawbacks for us. Above all, we could never adopt customs tariffs fixed by others.' What the President left unsaid was that complete integration would sooner or later lead to a uniform currency—and the Swiss understandably want to preserve the independence of their franc, which is the hardest currency in the world. Moreover, economic integration is the forerunner of political integration, and Switzerland, which refused to join even the United Nations, has no intention of getting 'mixed up' with any political bloc whatever.

Where the Green Gold is Minted:

The Forests of Norway and Sweden by MICHAEL SALZER

ROMANTIC legends endow the forests of Norway and Sweden with fabulous treasure, hidden and guarded by powerful trolls, witches, sprites, fauns and nymphs who lure the hapless wanderer to his death in a pathless wilderness of green shadows.

For centuries the people dwelling along the fringes of the dense forests on the slopes of the 'Northern Alps' won a meagre living from the hard, stony soil. They regarded the primaeval forests as useless waste land which merely provided the timber to build their boats, farm-steads and houses, to fence their fields, feed their kitchen ranges and warm their homes in the dark, icy winter months.

Although charcoal and saw-mill products had been used in central Swedish industries, it was not until some hundred years ago that the Scandinavians discovered the wealth which lay hidden in their forests, and only at the end of the 19th century did they begin to exploit in earnest this rich seam with its apparently endless supply of 'green gold'. Now, this current age of rapid technical progress and revolutionary scientific discoveries, of a booming chemical industry and the mechanization of transport, has suddenly made the spruces and pines more valuable even than amber, that petrified 'blood' of the resinous trees which was found on the northern beaches in Viking days.

The beginnings of the various industries which have developed and processed Scandinavian forestry products date back to the 16th century, when saw-mills prepared timber for export, and tar distilled from Swedish pine was sold all over Europe. In Norway the first mechanical pulp-mills were built in the middle of the 19th century; today there are 68 in full swing, turning wood into pulp, paper and cardboard. Sweden's oldest paper-mill, 'Klippan', was already established in 1573, at the instigation, so the story goes, of the Danish astronomer Tycho Brahe. He needed fine paper for his numerous charts of the movements of the stars and suggested that his uncle, the provincial governor of what was then the Danish province of Skane, in south Sweden, might use the ample water-supplies on his estate to produce the paper he required. Today Klippan produces more than a thousand different kinds of paper products, including some of the thinnest made anywhere, used for the airmail editions of newspapers, and others, thinner still, used for condensers in the electrical industry.

In early days all paper was hand-made from rags. With the demand rapidly rising in step with the spread of education and the expansion of the civil service, there was a marked shortage of rags, and not even drastic legislation regarding the use of linen rags could satisfy the increasing needs. Among the countries which contributed most, with their scientific knowledge and technical enterprise, to finding a substitute for rags, and to developing methods of using wood fibres to supply the much-needed raw material for paper, Sweden stood foremost. Suddenly its extensive forests, its wide network of waterways so suitable for transporting the timber to the mills, and its powerful rivers capable of producing electricity—a unique combination of natural advantages—proved of supreme importance. Within decades the newly established Swedish pulp industry was supplying most countries in the world, and today it provides nearly one-third of Sweden's total exports.

The slow-growing trees of the northern latitudes seemed to yield the ideal raw material for pulp-making. The tightly packed, long, tough fibres in the narrow yearly rings were found to 'feel' well for forming the paper web, and to be easily processed. These cellulose fibres, like small, hollow cylinders of great tensile strength, can resist pressure with the help of lignin, a hard and brittle substance surrounding them. In Swedish and Norwegian conifers the proportions are roughly 40–45 per cent cellulose, 25 per cent lignin, and the rest hemicellulose (removed in the chemical pulping processes by alkali treatment to produce special grades) and small amounts of resinous substances, sugars, etc. The fibres are separated either mechanically (for newsprint) or chemically (for paper and paper board).

Spruce is practically the only wood used for making mechanical pulp, because of its whiteness and relative freedom from resinous substances. The advantage of paper made by the mechanical

On the long journey from the forest to the factory, the logs that will one day be paper travel in many ways. They are hauled by horses down rough forest tracks; towed as great rafts along the waterways; and taken on the last lap from the landing-stages to the factories on lorries

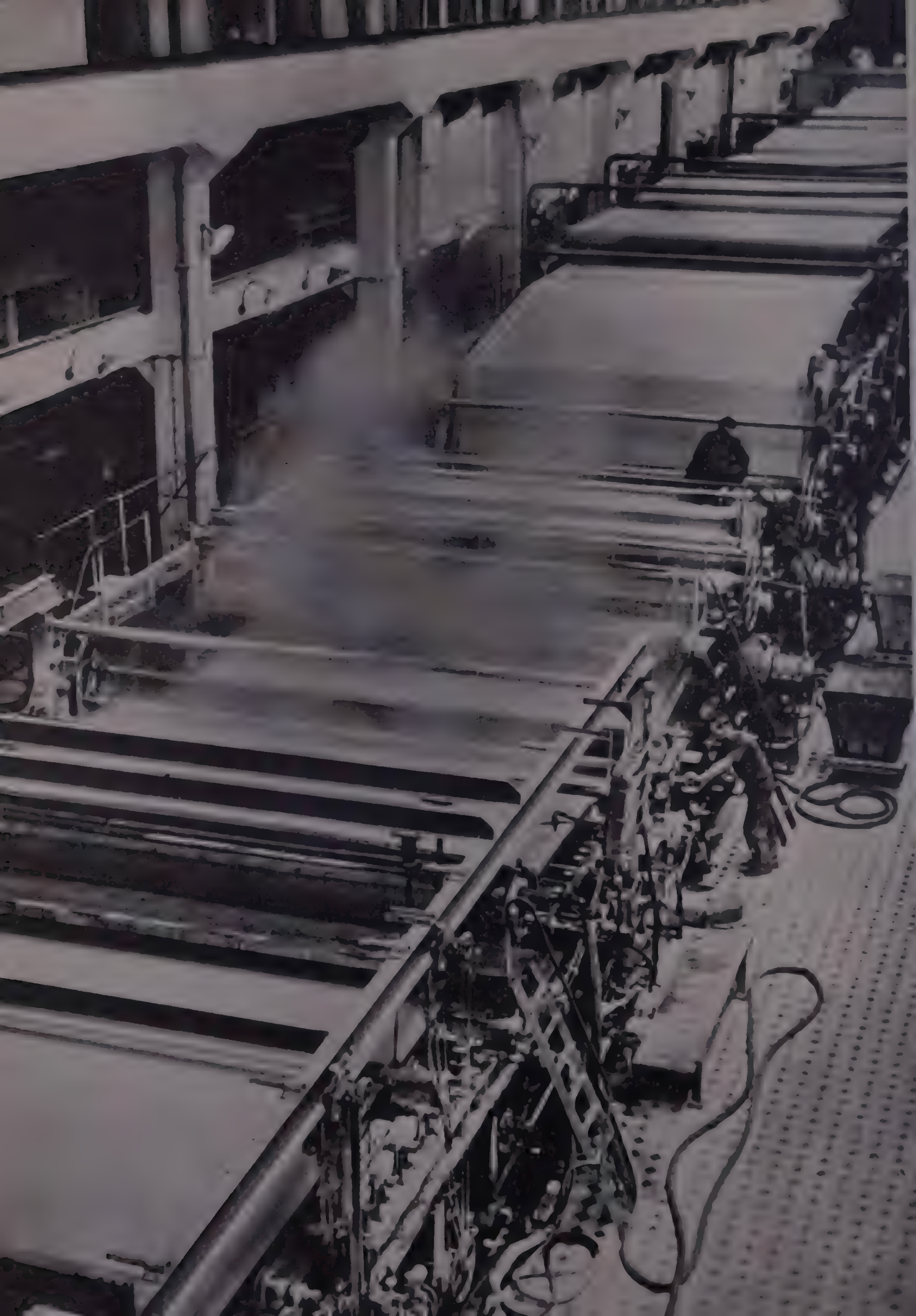
(*Above*) Logs to be turned into paper pulp are stripped of their bark and cut into small chips by machine; then they are carried on conveyor belts (*left*) to the boiler, and fed into it (*opposite*) together with chemicals and steam. The pulp flows from the other end in an uninterrupted stream method is that it inks well, even at high printing-press speeds, and is thus ideally suited for newspapers, where neither great durability nor strength is needed and where it does not matter much if the paper deteriorates fairly quickly when exposed to light and air.

To overcome the disadvantages that mechanical pulp shows as a durable substitute for rags in paper-making, chemical processes were developed. Chemical pulp-making may be more expensive, but it also yields a great many valuable by-products. Carl Daniel Ekman at Bergvik in Hälsingland had built the first Swedish sulphite pulp-factory in 1872. By this method spruce-wood chips are boiled under pressure in a solution of calcium bisulphite in huge digesters with capacities up to 12,000 cubic feet. Boiling periods vary according to the type and quality of pulp required. For finer paper or book-print the cooking periods are longer and the pulp is bleached.

Many factories nowadays employ the so-called sulphate process. It is more suitable in particular for resinous wood such as pine, which is pulped in a cooking-liquor of sodium sulphide and caustic soda. Improved Swedish methods have led to the use of woods other than pine and have thus vastly increased pulp output. Gradually it has become possible to process all the wood grown in the northern hemisphere right up to the Arctic Circle, where trees take 80 to 100 years to mature before they can be used in the pulp industry. With this improvement and the development of a network of hydro-electric plants, capacity figures for paper and board have risen steadily to their present 2,200,000 tons, which optimistic Swedish industrialists, aware of the present boom, hope to increase to 3,000,000 by 1965, estimating that almost two-thirds of this amount will be exported.

In Norway, too, the advance has been rapid and the million mark in tons of pulp-production has long been passed. Almost a tenth of the total Norwegian labour strength is employed in paper and pulp, which account for 12 per cent of the total value of Norway's industry. Similar figures are provided by the wood-manufacturing industries, so that over a fifth of the country's total industrial production is based on the forests.

In order to take fullest advantage of their resources, Norway and Sweden provide some of the most elaborate research facilities in the world. The Swedish Forest Products Research Laboratory in Stockholm, established in 1942, is today the Mecca of wood and forestry experts from all over the world. Its wood-chemistry and paper-technology departments provide the answers to many of the numerous problems facing the industry. Fluctuations in any of the processes of paper-making are analysed with



(*Opposite*) Pulp is turned into great sheets of paper by a process of rolling and beating. (*Above*) The 'Yankee machine' is designed to produce paper with a high gloss on one of its sides

mathematical computers and the behaviour of the fibres in pulp production is studied with photomicrographical apparatus which can magnify the minute cellulose cylinders a million times.

Individual companies also have their own laboratories. The Grycksbo Paper Mill in Dalarna for example can, as a result of its own research work, supply unique paper filters for the chemical industry and for scientific experiments. Some 150 years ago the noted Swedish chemist Jöns Jacob Berzelius had asked them to make the kind of filter he needed, and soon thousands of such filters were being exported in birch-wood boxes bearing the picture of Berzelius on the label. In his own text-books Berzelius did a good deal of free advertising for this paper, emphasizing that it should be made in a frigid winter climate so that the pores will loosen up, that its ash content should be low and that the water used in making it should be pure.

Some pioneering research in modified sulphite processes to increase the yield of highly refined pulp was made in the laboratories of the Swedish firm of Billerud in Säffle, where a research centre was equipped with an electronic brain to analyse the distribution of the fibre suspension during the feeding process of paper-making. Billerud can look back on seventy-five years of production, and they have paved the way for many others of the seventy-two Swedish paper-mills, which have had to adopt similar technical advances to maintain their share in the world market, where competition is steadily getting tougher.

Although domestic consumption is increasing considerably in step with the rising standard of living, Swedish paper- and board-mills depend for almost two-thirds of their output on the export market. Some 65 per cent of all the Swedish export is absorbed by Western Europe, 11 per cent goes to Latin America, and the rest mostly to Australia, South Africa and Asia.

Norway has retained the United Kingdom as its best customer for its paper production, but Sweden finds that Western Germany recently took the lead from the U.K., Denmark, the

Benelux countries, France and Italy. Whilst 406,000 tons of paper from Sweden went in 1959 to the 'Six' of the Common Market, the 'Seven' countries of the European Free Trade Association bought only 285,000 tons. Thus the Scandinavian paper industry has every reason to watch how the relationship between the two economic blocks develops, in order not to lose more on the Six market than it might gain with the Seven.

Pulp is largely imported duty free into most countries. The reduced customs walls within E.F.T.A. have therefore little effect on the pulp industry itself. On the other hand, the Scandinavians might have to consider establishing their own paper-mill within the Common Market, so as to convert their own pulp into paper there and thus avoid customs duties on the end-product.

Nevertheless Swedish and Norwegian paper-makers are optimistic. They expect to get their share of the rapid annual increase in the per capita consumption of paper all over the world. Rising living standards inevitably widen the demand, and as education spreads in the less developed areas and illiteracy recedes, the need for more books, writing-paper and newsprint automatically increases. This is mirrored in world statistics of per capita consumption of paper and paper board. Ten years ago the U.S.A. used 167 kilograms per person, against 64 in Sweden, 59 in the United Kingdom and 32 in Western Germany. Today the Americans still stand at the top of the list with 187 kilograms, but, with 105 kilograms for Sweden, 90 for the U.K. and 70 for Western Germany, their lead has been reduced. While the American increase was only some 15 per cent in the ten-year period, other countries, including Austria, Italy, France, Mexico, Greece and Spain, have more than doubled their paper consumption. Only India and Pakistan remained unchanged at the bottom of the list, with 1 kilogram per head.

In Norway and Sweden they can claim that their cellulose pulp is shipped to California or Cape Town and returns to Stockholm or Oslo in the form of thin paper wrapped round oranges, that it provides brightly coloured lanterns for Yokohama, or is turned into artificial leather in Buenos Aires, into cement sacks in Philadelphia and newsprint in London; that the Italians make it into artificial silk stockings and the French in Rouen into moulded toys, and that it is in great demand at Indian temple feasts as gay tissue paper. But paper in all its varieties is not the only product of wood pulp, and much of the rising importance of these Norwegian and Swedish industries is due to their own quick realization of the many uses of the by-products. They were soon aware that only half the log becomes cellulose product, the other half being dissolved in the pulp-cooking lye. This had seemed to be a waste-product, but valuable chemicals are now being salvaged from it. Resin substances and the lignin especially, as yet an only half-solved mystery to the scientists, now form the basic ingredients for the manufacture of such varied articles as sausage-skins, rayons, varnishes, glues, turpentine, cellophane, smokeless gun-powder, soap, printing-ink, dynamite, sugar, yeast, animal-fodder, alcohol, and even camphor for religious ceremonies in Bali—not to mention the wide range of plastics which have become so indispensable in our daily life, the many pharmaceutical and cosmetic preparations, optical lenses, cockpit covers for aeroplanes, and endless paraphernalia for artificial satellites now circling the earth.

Finland, which has close links with Sweden and Norway, though not a member of E.F.T.A., has perhaps the widest practical experience of the great variety of uses to which the derivatives of northern timber can be put. When cut off from most imports after World War II, and unable to buy textiles or leather, the Finns lived for many years in the 'paper age'. I well remember my first visit to Helsinki in 1947, when my host offered me a glass of Finnish brandy. 'If you don't smoke, at least have some Cognac or a piece of cake,' he said, 'you really must try some of our wood products!' And after a *skål* he sighed: 'If it had not been for our beautiful forests, we should have had nothing to drink all these years.'

In fact, the Finns not only produced some drinkable liquor from their timber, but also the baking powder, yeast and sugar for their cakes. They slept between paper sheets and dressed themselves from head to toe in clothing—hats, gloves, underwear and shoes—made from by-products of their pulp-mills or of material made from dissolving pulp. They drove their railways and their cars on wood and survived the severe winters by the glow of wood fires.

In these northern countries one is constantly aware how the 'green gold' of their forests, by opening out the new world, as yet only half-discovered, of macro-molecules of cellulose, is gradually rivalling in economic importance the 'yellow gold' of South Africa and the 'black gold' of the coal mines.

Nine Hundred Million Green Bottles: Beer from Denmark

by RICHARD BAILEY

By courtesy of Tuborg Breweries Ltd, Copenhagen

Tuborg Harbour, Copenhagen, with its cheerfully symbolic bottle-shaped beacons

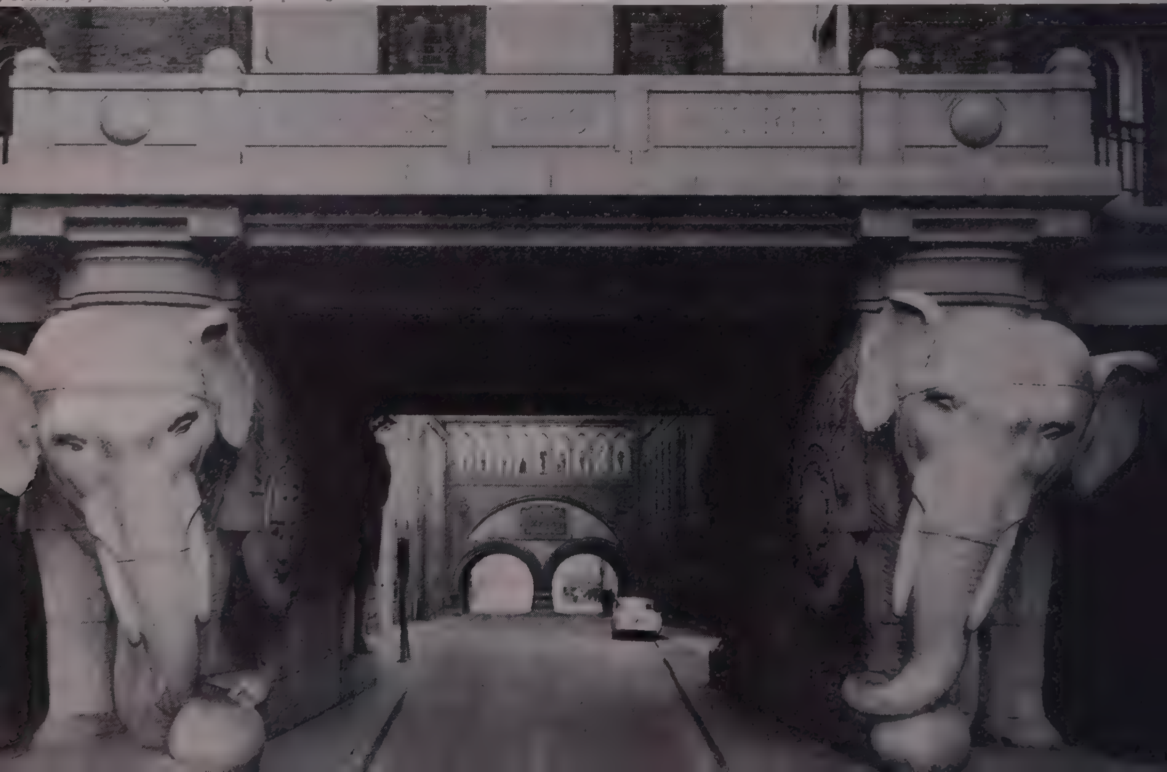
LAGER beer and Copenhagen go together. Most people landing at the wonderful new airport that the Danes have built at Kastrup pick up a map of Copenhagen. On it are the words 'Welcome to Tuborg—and wonderful Copenhagen'. And the amazing thing is that everybody is welcome both at Tuborg and at Carlsberg. Indeed the two breweries receive over 200,000 visitors a year between them. When I went round the Carlsberg Brewery recently I was puzzled at hearing singing in the distance. As I got nearer, the noise became recognizable as 'Auld Lang Syne'; it was being sung none too tunefully by a party of British visitors rounding off a tour of the brewery with a glass of beer.

Why should Denmark be a centre of the brewing industry? The reason is not too easy to find. The ingredients of beer are barley, hops, yeast and water, plus a considerable dose of know-how and long technical experience. The Danes grow all the barley they need, and indeed export some. What is more, all of it now consists of special strains that have been perfected as the result of research carried out by the big brewery companies. Denmark has plenty of water and in Copenhagen it is drawn from deep artesian wells; but the brewers are the first to admit that there is nothing very remarkable about it from a brewing point of view. Nevertheless Copenhagen mains-water is an important constituent of lager beer. Hops are bought on the world market. In recent years they have come from places as widely scattered as Western Germany, Yugoslavia, Belgium, France, the U.S.A. and Kent. So far as the ingredients are concerned, Denmark has no outstanding advantages over other brewing countries.

Why then have the Danes got so far ahead in this industry? The reasons for its development on such a big scale are largely historical. The pioneers were the Jacobsens, father and son, who created the Carlsberg business. The father, J. C. Jacobsen, built a new brewery in 1847, which he called Carlsberg after his young son Carl. The elder Jacobsen had a truly Victorian sense of public service and a veneration for learning that prompted him to set up a Foundation to promote the arts and sciences. Carl Jacobsen, who had an independent turn of mind, decided not to go into the family business but built a brewery of his own, the Ny (New) Carlsberg, alongside the old one. This building in red-brick baroque with its Elephant Gate, Dipylon (Double) Gate and classical central hall reflects his wandering interest in the arts. Apart from employing the best architects of the day on his brewery Carl Jacobsen extended the work of the Carlsberg Foundation. He started a fund for beautifying the parks and squares of Copenhagen and bought or commissioned many of the statues which now stand in public places in various parts of the town. Of these the best known is Edvard Eriksen's 'Little Mermaid' on the Langelinie, the harbour promenade. The four enormous green oxen ploughing their way through a fountain which bars the approach to the Langelinie are another Carlsberg bequest. And he filled the Glyptotek museum with pictures.

In 1902 Carl Jacobsen presented the brewery to the Carlsberg Foundation. The position is therefore that Carlsberg is now run on strictly profit-making lines, but with the difference that any profits not ploughed back into the business go to further the work of the Foundation.

The other great brewery in Copenhagen, Tuborg, has had quite a different history, but today makes an equally impressive contribution to the Danish economy. Tuborg was started in 1873 on a waterfront site which had formerly been part of the old Tuborg estate. Like Carlsberg, Tuborg owes its success to the energy and foresight of two men, but in this case they were not dedicated brewers like the Jacobsens.



The Elephant Tower and the Dipylon Gate of the Ny Carlsberg Brewery reflect the eclectic interest in the arts of Carl Jacobsen, who also presented the Little Mermaid to Copenhagen

y courtesy of Carlsberg Breweries, Copenhagen

C. F. Tietgen and P. W. Heyman were keen business-men who grasped the possibilities of the brewing industry and saw how to develop them. At first the company owning the Tuborg estate carried on a number of activities. P. W. Heyman, who became chairman in 1880, was not a man to persevere with failures, and the variety of the company's products was quickly reduced. The big success story, right from the start, was Tuborg beer.

The rapid growth of the Danish brewing industry dates from the 1880s, when three entirely revolutionary changes were introduced. The first was factory bottling in place of bottling by hundreds of retailers. The second development was the introduction of pasteurization, which required expensive plant and could only be carried out by big concerns. The third change, and this was in many ways the most revolutionary, was the introduction into Denmark of Pilsner, or light lager beer in place of the dark beers that had previously been popular.

Both Carlsberg and Tuborg had a hand in putting these changes into effect. The big contributions by the Jacobsens to the industry concerned the art of brewing. The most notable of these was the development of the method for the pure cultivation of fermenting bacteria in yeast, discovered in 1883 by Professor Emil Chr. Hansen, Carlsberg's chief scientist. Tuborg on the other hand was the first to realize the importance of having a brand name that would be known and recognized everywhere. This could only be achieved if the brewery had complete control over the contents of each bottle bearing its label. Hence the importance of bottling centrally and cutting out the little bottle-fillers all over the country, many of whom worked under extremely unhygienic conditions.

In 1894 Tuborg merged with a group of other breweries to form the United Breweries group. At the turn of the century the administration of the United Breweries was reorganized by B. Dessau, its gifted managing director. The interests of the whole group were concentrated at Tuborg and a big building and re-equipment programme was started.

By the beginning of World War I, sales of Danish beer were at record heights, but the wartime neutrality of Denmark raised some problems over both barley supplies and marketing. In the 1920s and 1930s the brewing industry in Denmark invested heavily in a programme of modernization, the effects of which can be seen like tidemarks in the buildings at both the big breweries; the harbour at Tuborg was improved and extended at this time. The German occupation in 1940–45 halted this busy progress. Although unable to export their products the Danish brewers remained in production. In 1945 Tuborg was badly damaged by German collaborators and faced the peace with a heavy liability in reconstruction and re-equipment: although an apparently crippling blow at the time, being forced to re-equip part of the brewery meant that old machinery was scrapped and a higher production capacity was achieved. Carlsberg was not damaged when the German occupation came to an end.

Today brewing is one of the most flourishing industries in a highly prosperous country. Danish beer is known at home and abroad for its quality and distinctive taste. What is the secret behind this industrial success story? The answer seems to be that there is no secret, but that success is due to a combination of experience, technical knowledge, highly efficient organization and the urge to make the perfect product. Brewing follows the same manufacturing cycle everywhere, but just as two cooks will make a completely different soufflé from the same ingredients no two breweries will produce the same beer. Indeed the Danes are highly indignant at the suggestion that just any brewer can make lager beer. Some people in the industry go so far as to argue that Danish lager, like whisky or champagne, is a distinct and separate product, one that can be imitated but not reproduced outside Denmark. For this reason the Danes are incensed at the name—a Danish word—chosen by an English brewery for their lager beer. This is a subject on which brewers will argue for a very long time to come; the public, given the chance, will show their preference by buying the beer they like.

What are the export prospects of the industry? Britain and Denmark are two of the seven members of the European Free Trade Association (E.F.T.A.). Eventually tariffs will be removed on all manufactured goods traded between E.F.T.A.'s seven member nations. The tariff on beer has not been cut so far, as several of the E.F.T.A. countries, including Britain, have taken advantage of a clause in the Stockholm Convention allowing tariff cuts on some products to be made only at the end of five years. This will mean that the duty on Danish beer will remain intact until 1965, when it will be cut by 50 per cent,

courtesy of Carlsberg Breweries, Copenhagen

(*Above*) The Carlsberg brewhouse and (*below*) the Tuborg ageing tanks clearly indicate the clinically hygienic conditions under which lager is made in these two biggest Danish breweries

courtesy of Tuborg Breweries Ltd, Copenhagen

unless the whole progress towards freer trade is speeded up in the meantime. Or, of course, unless Britain and the rest of the E.F.T.A. countries join the European Economic Community (Common Market) of the 'Six'.

Whatever happens there is no doubt that Danish lager beer will continue to be exported to the West European countries. The effect of the new tariff arrangements will not be by any means the same everywhere. In Norway and Sweden, for example, where the production and sale of alcohol is strictly controlled by the State, the Danes do not expect to see any considerable increase in their sales. In Britain the limiting factor on bigger sales of Danish lager is not tariffs but the way in which the trade is organized. The system of tied houses is far more effective in keeping out competing products than any tariff. The amalgamations that took place in the British brewing industry early in 1960 are said by the Danes to have increased their difficulties by tying up the trade more tightly than ever.

Inside the Common Market Danish lager sells best in the northern parts of Germany, but faces stiff competition elsewhere both from the national brews and from the Rhine, Moselle and south German wines. Holland, which has a surprisingly small domestic beer consumption but is Europe's biggest exporter of beer, and Belgium both have considerable brewing industries; both nevertheless import Danish beer. The whole question of trade with the Six is in fact a matter of prosperity. If the Common Market really gets going and increases production and trade to a level so far only achieved in the United States, living standards will go up too. This will mean not only more cars choking the roads, and more power to the hausfrau's elbow in the shape of spin-driers and other domestic machinery, but also more and better things to eat and drink. The Danish brewers hope that this will result in bigger sales of their products, especially to women and young people.

Outside Europe the Commonwealth countries of Africa are one of the big markets for Danish beer. There, light beer for high temperatures seems to be considered a good principle. Ghana and Nigeria are both big importers of Danish lager, and so are Malaya and Far Eastern countries. The United States is another important market and the Danes have shown considerable ingenuity in using American marketing methods. One of Tuborg's TV commercial spots has set the Americans wondering how to pronounce Copenhagen; and the Carlsberg cellarer in his leather apron is a familiar figure in the glossy magazine advertisements.

And now for some figures. Today the two big breweries control about 85 per cent of the Danish market. Both export about 25 per cent of their output. In terms of bottles, production is about 450,000,000 bottles of beer a year at each brewery. The report of the Tuborg annual meeting (*Financial Times*, January 30, 1961) stated that 1,613,000 hectolitres, or 35,000,000 gallons of beer, and 89,000,000 bottles of mineral water were produced in 1960. This vast amount of liquid means a sale of more than 1,500,000 bottles of beer and mineral water every day for 365 days.

As well as Carlsberg and Tuborg there are thirty other breweries in Denmark. Most of these are small local affairs but a few produce beers that are nationally known. Working down from the biggest of the small breweries the most notable are the Ceres Brewery in Aarhus, the Albani Brewery in Odense, Wiibroes Brewery in

Six million delectable bottles of beer at a time can be distributed from the Tuborg Brewery's North Hall

By courtesy of Tuborg Breweries Ltd, Copenhage

ourtesy of Tuborg Breweries Ltd, Copenhagen

Tuborg charters a fleet of vessels, the Tuborg Lager Line, to take its beer direct to five ports in the British Isles: Topsham, Goole, Belfast, Dublin and the Channel Islands

Elsinore, and the Thor Brewery in Randers, Jutland. In addition there is the Star Brewery in Copenhagen which is owned by the trade unions and cooperative societies. This brewery is said to be losing ground for the simple reason that the workers like to choose which brand of beer they will drink for themselves. This seems as reasonable a proposition for Danes as for anybody else.

The big breweries represent a great asset to the government in its effort to make the word 'Danish' synonymous with quality. The impression those 200,000 visitors take away is important not only to the brewers but to the whole of Danish industry.

So today although Denmark is known for its butter, bacon and Danish blue cheese, there is no doubt that its most famous manufactured products are its lager beers. It is to be expected that a people as fond of good food as the Danes, living outside the wine-growing latitudes, should have made for themselves the best possible alternative drink. Nor is it surprising that the Danes, who live in a country that imports many of its manufactured goods, should have built up brewing into a major exporting industry. Brewing has set its mark on Copenhagen, quite apart from the statues dotted about the town. The present-day buildings of the brewers are themselves quite distinctive. Each has its prominent features that make it into something of a local landmark: the big Tuborg water tower and the Carlsberg beacon and lighthouse. Then there are the gimmicks—Carlsberg's white railway and motor trucks, and Tuborg's horse vans, motor trucks and railway vans all with their distinctive canopy over the driver's seat. And about a million people a year travel on the ferry from Sweden which arrives at Tuborg Harbour: those travelling at night see the giant neon sign on the brewery for the whole of the crossing.

But these things are just indications of the fact that the Danes are good business-men who don't hide their light under a bushel. The Danes like their beer, they make it as well as they can, and they want people at home and abroad to buy it. These are the three principles on which Danish brewing was built up. And the result is an industry in which not only management and workers but the whole country takes a pride.

The British Motor Industry

by MICHAEL SHANKS

'THERE'S only one thing wrong with the British motor industry—the fact that it's here in the Midlands.' This rather jaundiced comment came from a Birmingham machine-tools manufacturer, having increasing difficulty in meeting his order commitments because his workers were leaving him in droves to seek jobs in the booming, high-paying motor-assembly plants. The irony of it was, as he went on to tell me, that most of his orders came from these same motor companies.

The complaint that the motor industry pushes up wage rates and attracts labour from other industries is a common one in the labour-scarce Midland cities. It is in its way a tribute to the big motor companies, whose prosperity in recent years has provided the basis for this huge, surging industrial complex in the heart of England. Four of the 'Big Six' car manufacturers—the British Motor Corporation, Rootes, Standard-Triumph International and Rover—have their main assembly plants here, in Birmingham, Coventry, Oxford and nearby towns. Around them are grouped the big component and accessory manufacturers—firms like Lockheed, Lucas, Pressed Steel and so on; and around them again are grouped the many hundreds of small suppliers whose livelihood depends ultimately on a constant flow of orders from the motor industry.

The only big motor firms so far operating outside the Midlands are the two American offshoots—Ford (which has recently been taken over *in toto* by its parent company in the U.S.A.), with a main factory stretching along the Thames at Dagenham downstream from London (an ideal site for shipments to Europe), and Vauxhall (a wholly owned subsidiary of General Motors Inc. of Detroit), whose plant is situated at Luton, midway between London and the Midlands.

The reasons for this concentration are clear enough. The biggest slice of the home market for motor cars lies in the highly populated flourishing area of southern and central England. The Midlands is equidistant from the two great export ports of London and Merseyside, the one ideal for supplying Europe and the Commonwealth, the other for supplying North America. And the British motor industry, it should not be forgotten, normally exports between 40 and 50 per cent of its total output. At the same time, it is vital for the big car plants to have easy and speedy access to their suppliers—to the sheet steel which comes mainly from South and North Wales, to the numerous parts and components brought in hour by hour from outside suppliers. Those who want to disparage the motor firms point out that they do not in actual fact make motor cars, they merely assemble them from a mass of components made by other people. This is a fair comment, but it is in fact a source of the industry's strength and flexibility. Because it has been able to build up this intricate network of deliveries, the industry has been able to operate on very low stocks of materials, thus freeing capital and factory space which can be devoted to ensuring that assembly lines are as speedy, as efficient, as highly automated as any in Europe.

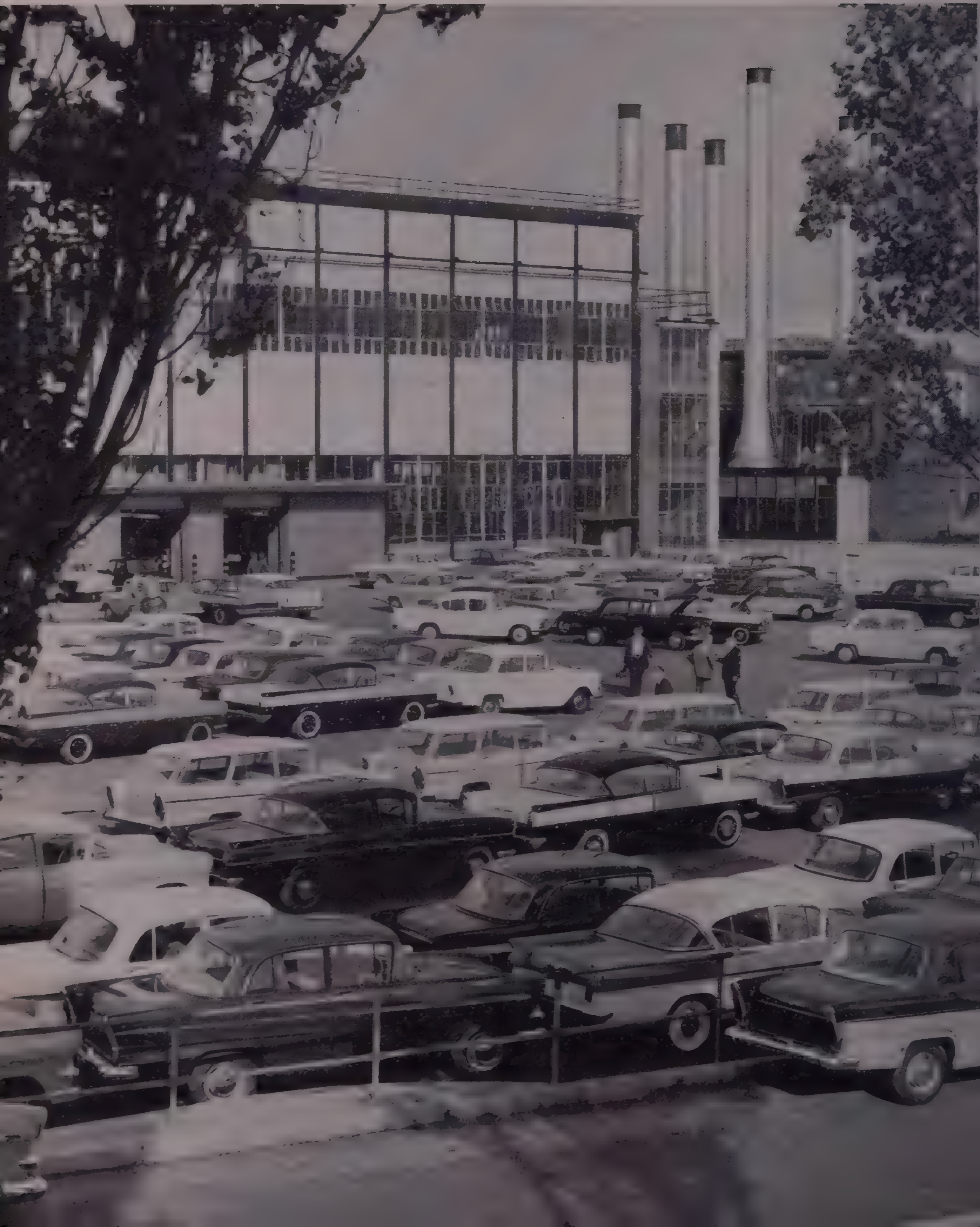
The concentration of the motor industry goes even further than this. To many people 'motors' mean basically passenger cars. But each one of the Big Six has a sizeable production of commercial vehicles—trucks and vans—as well. The last remaining major independent producer of commercial vehicles in Britain—Leyland Motors—is now in process of merging with Standard. This coordination is a great stand-by on those occasions, like the present, when passenger cars for one reason or another are not selling well. A particular beneficiary is the smallest of the Big Six, the Rover Car Company, much of whose success rests on the very popular Land-Rover.

Two of the Big Six are also among the five important manufacturers of farm tractors in Britain. One, Ford, shares with Massey-Ferguson (which used to have its tractors made for it under licence by Standard, but now makes them itself) leadership in the production of farm tractors in this country. The tractor industry is one of the most impressive in Britain on its postwar record; far ahead of any of its rivals on the Continent, it regularly exports around two-thirds of its production. Some of the motor firms are also concerned in such ancillary types of production as mechanical handling and lifting gear—for example the B.M.C. subsidiary Fisher & Ludlow.

This huge industrial complex—and one should

A selection of 1961 models just off the production line outside the large Vauxhall plant at Luton, which was completed in 1957

courtesy of Vauxhall Motors Ltd



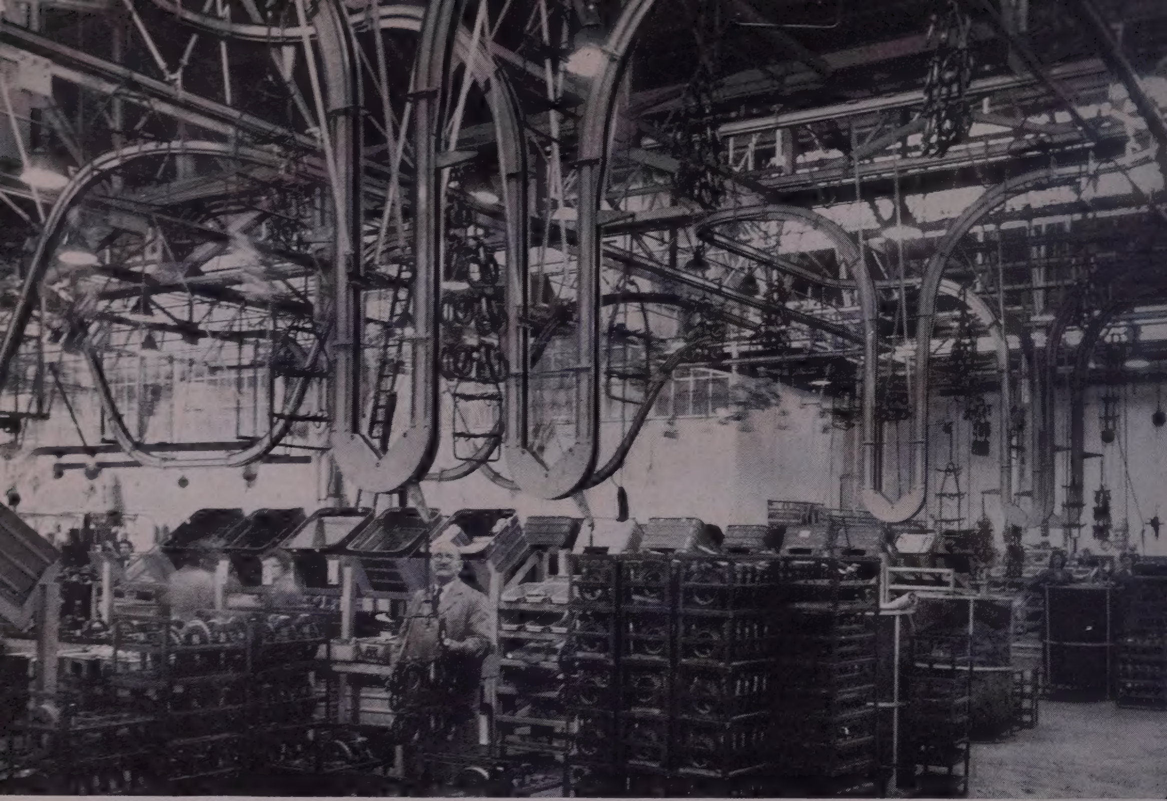
not forget such distinguished 'outsiders' as Jaguar (now enlarged to include Daimlers) and Rolls-Royce—accounted in the first eleven months of last year for a total production of some 1,276,000 passenger cars and 412,000 commercial vehicles. Of these nearly 550,000 cars and 150,000 commercial vehicles were sold abroad. In the first ten months of 1960 Britain produced 154,000 farm tractors, of which 121,000 were exported. Despite the recession in the second half of the year, these are the highest figures ever recorded. In recent months passenger cars have run into difficulties, mainly because of greatly increased competition from the new Detroit-made 'compact' cars in the North American market, a market which in 1959 took one in every five cars made in British factories, and nearly half of all exports. This boom was too good to last, and the backwash hit the home market just at a time when home sales were themselves being hit by the government's restrictions on hire purchase. The motor industry's hopes have been dealt a hard blow. At present it looks as if sales and output in the first part of 1961 will be at least 20 per cent below the rates reached at the peak of the boom early in 1960. But if, as some people in the industry still hope, sales recover in the summer, it is still conceivable that the record for 1961 may not be all that much below 1960.

The motor industry is a notoriously volatile one, and its leaders have learned to acquire strong nerves and a phlegmatic temperament. The industry is going ahead with the expansion plans drawn up at the top of the boom despite the subsequent downturn. These expansion plans will have one great advantage for the industry and the national economy as a whole, quite apart from the extra production capacity they will create. For the first time they will free the motor industry and the Midlands from their dangerous mutual dependence on each other, and from the complex 'love-hate' relations this has engendered. At government insistence, the new motor plants will be located on Merseyside, in Scotland and in South Wales—areas where up to now it has been jobs rather than workers that have been in short supply. New integrated motor plants are being built on Merseyside by Ford, Vauxhall and Standard. Rootes and B.M.C. are setting up factories in Scotland, and Rover is going to Cardiff. The advantages of these sites are considerable, apart from their labour reserves. All three are in fact nearer to the main sheet-steel suppliers than any of the leading car factories are at present—or will be when the steel strip mill now being built by Colvilles on the Clyde comes into operation in a year or so's time. At first there will no doubt be extra costs and complications caused by the duplication of managerial and technical requirements, and by the fact that many parts and components will need to be transported from the Midlands. It may take some time to establish the easy, rapid flow of parts on which the Midland assembly plants depend. But sooner or later the component and accessory manufacturers will themselves establish plants near the new motor works, which will in turn act like a magnet, attracting a host of light industries to the north and west.

The result will undoubtedly benefit the whole motor industry and the country. The car manufacturers will no longer suffer so much from labour shortages, nor will they inflict such shortages on their neighbours. The growing traffic congestion in Midland cities will be eased. Also, the industry argues that once it is established in areas where labour is not scarce it will be a less tempting target for government restrictions whenever inflationary pressure looks like building up in the national economy. The benefits as a whole of a more even, less concentrated industrial spread are obvious enough.

It is in a way surprising that the car industry should have retained so much of its optimism after it has seen its biggest single export market crumble before its eyes last summer. But the answer is that this decline in the U.S. market was foreseen from the moment when the Detroit companies decided to enter the so-called 'small-car' market themselves ('small' by American rather than British or European standards). The big export markets of the 1960s, the industry decided some time ago, will lie in Europe—the Europe of the 'Six' and the 'Seven'. The reasoning is simple. In the United States there is one car to every three people. In Britain, despite the huge increase in car sales of the last few years, the ratio is one to ten—and the average age of cars in use is far greater than in the U.S.A. On the Continent the ratio is even smaller.

Is there any reason to suppose that saturation-point for car sales will be reached in this country until the car-to-people ratio is somewhere near what it is today in the U.S.? All the evidence suggests that in the last few years the motor industry has achieved something of a psychological 'break-through'. The motor car is no longer regarded in Britain as a luxury, for the



y courtesy of Fisher & Ludlow Ltd

(*Above*) Car parts being transported on overhead chain conveyors made by Fisher & Ludlow, a B.M.C. subsidiary. (*Below*) The mass production of batteries at the Lucas works in Birmingham

y courtesy of Joseph Lucas Ltd

well-to-do, but as something to which every working-man should aspire. The implications of this new mass hunger for car ownership for our road system, our railways, town planning, housing standards and so on are revolutionary and in many ways highly alarming. But its existence cannot be doubted.

According to the motor industry's calculations, Britain could move to a state approaching saturation (with, say, one car to every four or five people) by the end of the 1960s. This could mean a total car population in this country of about 8,500,000 or 9,000,000 by 1965—3,000,000 to 3,500,000 more than today—and a potential home market for British cars of about 1,000,000 a year—80 per cent more than in 1959. This assumes of course that the government does not bottle up demand by continual curbs on hire-purchase transactions.

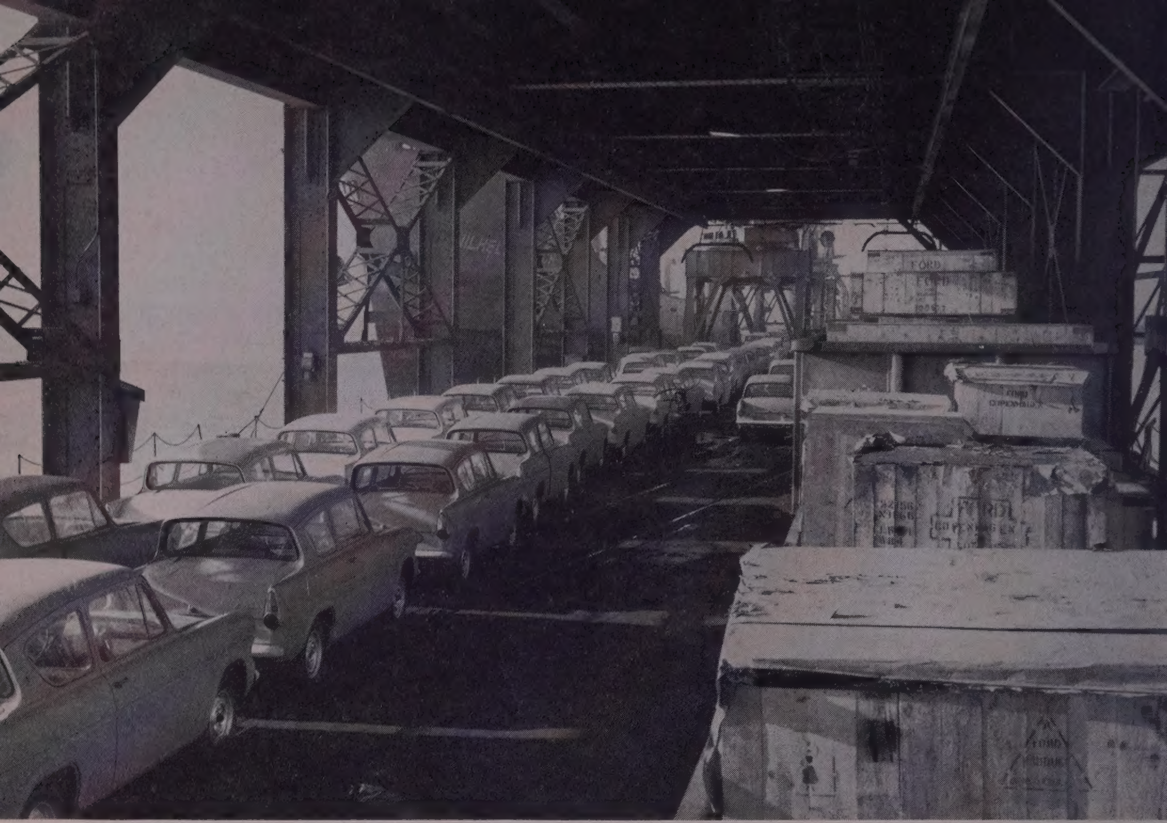
What is true of Britain applies even more strongly to the Continent of Europe, where the car-to-people ratio is even less than here but where the demand for cars is growing even faster. The ratio varies from about one car to every nine people in Sweden to one in nineteen in Germany and one in thirty-eight in Italy. It is clear enough that Europe will be the fastest-growing market for cars in the next ten years or so, and potential overseas sales of cars should rise at least as sharply as home sales. Even if the U.S. market had not collapsed last summer some diversion of effort to Europe would have been inevitable.

Undoubtedly the biggest growth in demand in Europe will come from the Common Market of the Six, if only because they have the larger population and a smaller degree of saturation at present. The British motor manufacturers are therefore strongly in favour of a *rapprochement* between the Six and the Seven, since they believe that in a straight competitive struggle the British industry could more than hold its own against the Germans, French and Italians—and this applies even more strongly to commercial vehicles and tractors than it does to passenger cars. So British firms are going ahead with production plant inside the Common Market.

But the European Free Trade Association, the Seven, offers important consolation prizes. Of its members, Britain alone possesses a motor industry of any importance, though Sweden operates one on a fairly small scale. This means that British manufacturers have a splendid opportunity to replace German and other Continental car sales in Scandinavia, Switzerland,

Leyland Super Beaver trucks operate on long-distance work in all weathers throughout Sweden. These two have been converted from four- to six-wheelers by fitting Swedish back-axle bogies

By courtesy of Leyland Motors L



courtesy of the Ford Motor Company Ltd

A few among thousands: Anglias wait to be shipped from the Ford Wharf at Dagenham to Sweden

Austria and Portugal. In 1959 these countries took between them some 46,000 British passenger cars, and Sweden was in fact our biggest single Continental customer. There is no reason why this total should not be doubled in a few years.

This is the thinking behind the industry's expansion programme. If its calculations are right, demand for cars in Britain and Europe should grow at an average annual rate of around 7 per cent in the coming decade, and around 10 per cent in the first half of it. The question is really who will be able to take advantage of this upward trend. British manufacturers are determined that the market should not go to their Continental competitors, and that is why they are investing huge sums in new plant which will enable them not only to produce many more cars but also to get production costs down—a vital factor in such a competitive industry.

The expansion programme scheduled for Merseyside and elsewhere will cost the industry altogether something like £300,000,000, but it will give Britain a total production capacity by 1963 of at least 3,000,000 vehicles a year, of which about 2,250,000 will be passenger cars. This means that in two years' time Britain will be able to make nearly half as many cars and vehicles again as she can today, and 70 per cent more than a year ago. This is a fabulous rate of increase and, coming at a time when the industry is unable to sell all the cars it can turn out even with its present much smaller capacity, it may well appear foolhardy. But the manufacturers know that in this industry one cannot afford to stand still. The long-term market looks as bright as ever, and no manufacturer dare find himself with insufficient capacity to supply it. If the influx of new car plant in the next few years means keener competition here and on the Continent—for Continental car makers are expanding as fast as the British—well, the British industry is ready for that too. It may well be that the number of separate producers will be reduced even further, for the motor industry is one where the big battalions enjoy special advantages. But if the total market for cars stops expanding it will shake more than the motor industry.